Proposed
Shoreline Master Program Guidelines
Rule Amendment (WAC 173-26, Part III and Part IV):
Final Environmental Impact Statement

Shorelands and Environmental Assistance Program

Washington Department of Ecology

November, 2000

Publication 00-06-020

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

Dear Reader:

I am pleased to present this Final Environmental Impact Statement (EIS) which analyzes WAC 173-26, Parts III and IV. This is a proposed administrative rule that would replace the existing WAC 173-16 which governs the preparation of local government Shoreline Master Programs (SMPs) as required by the Shoreline Management Act (SMA).

You will find that this EIS looks somewhat different than the typical one. Rather than analyze entirely separate, stand-alone alternative proposals, we chose instead to evaluate the different alternative choices within each major policy area. We believe this is a more meaningful way to reflect the choices that were available.

The key environmental issues and options facing environmental decision-makers are:

- Preparing local SMPs that provide enough certainty to meet the requirements under the SMA and garner protection from liability arising from the federal Endangered Species Act (ESA), yet provide the flexibility for cities and counties to choose their own way of meeting those requirements.
- Identifying and protecting ecological functions performed by our shorelines while accounting for local environmental conditions and needs.
- How to reduce the cumulative adverse impacts of vegetation clearing, bulkheads and other forms of "hard" shoreline armoring, and docks and piers

This Final EIS and the rule it analyzes are a significant milestone in our multi-year effort to adopt a new shoreline master program guidelines rule.

Sincerely,

Gordon White

Gordon White, Manager
Shorelands and Environmental Assistance Program

Proposed
Shoreline Master Program Guidelines
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Final Environmental Impact Statement

November 6, 2000

Publication 00-06-020

Shorelands and Environmental Assistance Program
Washington Department of Ecology
Olympia, Washington

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Fact Sheet

Title:	Proposed Shoreline Master Program Guidelines Rule Amendment.
Description:	The proposal is for an amendment of WAC 173-26 to add a Part III and Part IV which provides guidelines for the update of local shoreline master programs adopted under the Shoreline Management Act (RCW 90.58), and to void the existing guidelines for the development of local shoreline master programs now at WAC 173-16. When adopted, the amended rule will require local governments to update their local Shoreline Master Programs as provided in RCW 90.58.
Proponent:	Shorelands and Environmental Assistance Program, Washington Department of Ecology.
Proponent Contact Person:	Peter Skowlund.
SEPA Lead Agency:	Shorelands and Environmental Assistance Program, Washington Department of Ecology.
SEPA Responsible Official:	Gordon White, Manager Shorelands & Environ. Assistance Program Washington Department of Ecology PO Box 47600 Olympia, WA 98504-7600
Lead Agency Contact Person:	Douglas J. Canning
Action Required:	Adoption of amendment to WAC 173-26, and repeal of WAC 173-16.
EIS Authors:	Douglas J. Canning, Editor (see Appendix A for complete list of authors and contributors).
MDEIS was issued:	June 28, 2000.
MDEIS comments were due:	August 7, 2000.
Public Meetings and Hearings:	**Pasco** Tuesday, June 27, 2000 Columbia Basin Community College Workforce Training Center, Room 180 2600 North 20th Avenue Informal Open House: 5:30 PM Formal Public Hearing: 7:00 PM

Continued on next page.

Spokane
Wednesday, June 28, 2000
Spokane Intercollegiate Research and
Technology Institute (SIRTI), Room 201
665 North Riverpoint Blvd
Informal Open House: 5:30 PM
Formal Public Hearing: 7:00 PM

Wenatchee
Thursday, June 29, 2000
Chelan County PUD
327 North Wenatchee Avenue
Informal Open House: 5:30 PM
Formal Public Hearing: 7:00 PM

Olympia - Lacey
Wednesday, July 5, 2000
Washington Department of Ecology Auditorium
300 Desmond Drive, Lacey
Informal Open House: 5:30 PM
Formal Public Hearing: 7:00 PM

Raymond
Thursday, July 6, 2000
Raymond High School Auditorium
1016 Commercial Street
Informal Open House: 5:30 PM
Formal Public Hearing: 7:00 PM

Vancouver
Monday, July 10, 2000
Water Resources Education Center
4600 SE Columbia Way
Informal Open House: 5:30 PM
Formal Public Hearing: 7:00 PM

Seattle
Tuesday, July 11, 2000
Seattle Center, Shaw Room
305 Harrison Street
Informal Open House: 5:30 PM
Formal Public Hearing: 7:00 PM

Continued on next page.

	Bellingham Wednesday, July 12, 2000 Whatcom County Courthouse Council Chambers 311 Grand Avenue Informal Open House: 5:30 PM Formal Public Hearing: 7:00 PM
FEIS Date of Issue:	November 7, 2000.
Expected Final Rule Adoption:	November 14, 2000.
Subsequent Environmental Review:	Local governments will conduct environmental review prior to adopting Shoreline Master Program amendments.
Prior EIS:	The Modified DEIS on the proposed amendment of the Shoreline Master Program Guidelines Rule (now WAC 173-16) superceded the previous Draft EIS issued on April 12, 1999, titled *Shoreline Management Act Guidelines for the Development of Master Programs (WAC 173-16): Draft Environmental Impact Statement*. The previous version of the draft rule was withdrawn, substantially modified, and refiled with the Code Revisers Office. Accordingly, the MDEIS was re-written in its entirety.
Location of EIS Information:	Shorelands & Environ. Assistance Program Washington Department of Ecology 300 Desmond Drive Lacey, Washington Persons desiring to view the EIS information files are strongly encouraged to make an appointment by telephoning 1-888-211-3641 (toll free) or sending an e-mail to shorerule@ecy.wa.gov.
Incorporations by reference:	Incorporations by reference are identified in Chapter 8, References Cited and Consulted.
Cost of FEIS:	There is no cost for single copies of the Final EIS through December 31, 2000.
Commenting on the MDEIS	Comments on the MDEIS could have been submitted by postal mail, facsimile (fax), or e-mail. All comments were be post marked or date stamped no later than August 7, 2000.

Continued on next page.

Termination of special access	The special toll free telephone number (1-888-211-3641) and special e-mail address (shore-

rule@ecy.wa.gov) for this project will terminate on December 31, 2000.

Table of Contents

1 • Summary

Reading this summary merely provides an overview and cannot be regarded as a substitute for reading the entire document.

Organization of Draft EIS

Chapter 2, Approach and Affected Environment, provides a discussion of how we approached environmental analysis for this environmental impact statement, and a definition of the "affected environment." Readers should expect the generalized discussions which are appropriate to and typical of a non-project or programmatic environmental impact statement.

Chapter 3, Authority and Need, first states the authorities for the proposed rule amendment found in the Shoreline Management Act. It then summarizes the need for the proposed rule amendment.

Chapter 4, Alternatives, first summarizes the process Ecology pursued in arriving at the alternative approaches to updating the Shoreline Master Program Guidelines rules, and then summarizes the alternatives considered by Ecology and its advisory committees.

Chapter 5, Habitat-scale Existing Conditions, addresses the landscapes which come under the Shoreline Management Act — an act which was adopted in 1971, and for which substantive implementation had begun by the mid 1970s when most local governments had adopted shoreline master programs under the existing WAC 173-16. Therefore, this chapter is also a description of the environmental impacts and trends resulting from the application of WAC 173-16. This chapter is organized around the fundamental landscape features which come under the Shoreline Management Act: marine systems and habitats, stream and river systems and habitats, lakes, and wetlands.

Chapter 6, Comparative Impact Analyses, compares the No Action Alternative with the Preferred Alternative by analyzing the specific sections of the proposed WAC 173-26.

Chapter 7, Integrated Analysis, provides a brief review of the cumulative effect of the key portions of the proposed WAC 173-26.

Chapter 8, summarizes the comments on the MDEIS and presents Ecology's responses.

Chapter 9, References Cited and Consulted, provides a bibliography of reference materials consulted in the preparation of this environmental impact statement. Full bibliographic references for the authorities cited in text by the "Author, Date" notation may be found here.

Appendix A identifies the Draft EIS authors and contributors.

Appendix B lists the agencies provided with a copy of this EIS on the initial distribution.

Appendix C lists the local governments required to adopt a shoreline master program under the Shoreline Management Act.

Appendix D provides a glossary of terms and abbreviations.

Objectives, Purpose, and Need

The Shoreline Management Act charges Ecology with periodically reviewing and amending guidelines for implementing the SMA as directed by the 1995 legislature in ESHB 1724 which amended the SMA at RCW 90.58.060 — please refer to Chapter 3, Authority.

The *Report of the Shoreline Guidelines Commission to the Department of Ecology* dated February 16, 1999 states that the guidelines need updating for three principal reasons:

> 1. The Legislature has required that the guidelines be updated. The 1995 regulatory reform legislation, Engrossed Substitute House Bill 1724, stated in Section 1, that the Growth Management Act "...should serve as the integrating framework for all other land-use related laws." ESHB 1724 also established a schedule for local governments to review and update their plans and development regulations, with the next such cycle due September 1, 2002. If master programs are to be integrated in accordance with ESHB 1724 in this cycle, the guidelines need to address integration issues well in advance of that date.
>
> 2. Population growth and changes in the law, planning practice, and use of science since 1971 are significant and require clearer guidance in the rule in order to achieve balanced and effective resource management.
>
> In chapter 90.58.020 RCW the Legislature found "...that the shorelines of the state are among the most valuable and fragile of its natural resources and that there is great concern throughout the state relating to their utilization, protection, restoration and preservation…" and called for "...coordinated planning ... in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property."
>
> The guidelines need to provide better direction to local governments for effective protection, restoration and preservation of natural resources and utilization of the shorelines, particularly with regard to conflict among uses preferred in the Act.
>
> 3. A premise of the Governor's Salmon Recovery Strategy is to use existing laws to comply with the Endangered Species Act. Since salmon depend on many areas and resources within the jurisdiction of the Shoreline Management Act for their survival, the guidelines need to show how local master programs can help implement the strategy to recover salmon and their habitat.

Ecology's objective and purpose in adopting the proposed rule amendment is to:

- comply with the legislative mandate at RCW 90.58.060; and
- update the existing guidelines rule to bring it into conformance with current practices, science, and technology.

Alternatives

Four alternatives were considered. The "No Action" alternative required to be evaluated by SEPA is continued application of the existing rule, WAC 173-16. Three other alternatives were considered: Alternative B – Prescriptive Standards; Alternative C – Policy Guidance; and Alternative D – Performance Standards. During the winnowing process (see below) alternatives A, B, and C were considered and rejected relatively early in the process. Alternative D then emerged as the preferred alternative. As Alternative D was further developed, elements of the other alternative approaches were incorporated where deemed appropriate.

Alternative A: No Action
Continued Implementation of Existing WAC 173-16

Continuing to use the existing Shoreline Mater Program Guidelines rule (WAC 173-16) is the 'no action alternative.' That is, if no action were taken, WAC 173-16, adopted in 1972, would remain in affect, governing the content of local Shoreline Master Programs. WAC 173-16 is characterized in Chapter 6, Comparative Impact Analyses, for analytical comparison with the preferred alternative.

Alternative B: Prescriptive Standards

The Guidelines Commission (1998 – 1999) considered developing new guidelines with specific prescriptive standards. This alternative approach would result in a rule with specific numerical standards, effective state-wide, that set minimum requirements for local governments to achieve through their local SMPs for the full range of shoreline uses. This alternative approach was considered early in the Commission's process, and discussed repeatedly throughout the Commission's term. No consensus was ever reached by the Commission members that Prescriptive Standards were a desirable or viable approach despite the passionate support for this pathway by some Commission members.

In consultation with local government representatives, Department of Ecology staff learned that while some local planners supported prescriptive standards, others viewed them as too restrictive and counter-productive.

In the end, Ecology determined that Prescriptive Standards were not a viable alternative for lack of broad support, and chose not to pursue this alternative.

Alternative C: Policy Guidance

The Shorelines Guidelines Commission also considered using a general policy approach that would provide guidance to local governments and flexibility to implement individual SMPs at the local level. However, as with Alternative B, Prescriptive Standards, no consensus could be reached that Policy Guidance was a viable approach, and eliminated from detailed study early in the Commission's process.

Alternative D: Performance Standards

The preferred alternative, Performance Standards, is an amendment of WAC 173-26, incorporating two new sections, Part III and Part IV, each containing new guidelines for shoreline master programs, and voiding the existing shoreline master program guidelines in WAC 173-16.

As described in Chapter 4 (Process of Developing Alternatives, Phase 4), Parts III and IV are dual paths to achieving the same results under the Shoreline Management Act. Part III sets forth "mandatory minimum procedures and performance based standards, but would allow local governments the flexibility to decide how to achieve the performance standards." Part IV, on the other hand, provides great specificity to aid local governments in developing a master program that achieves the performance standards.

All local governments required by the SMA to adopt a shoreline master program (SMP) will be required to amend their existing SMP in accordance with Part III, or alternatively, at their choice, under Part IV. For a list of these local governments, please refer to Appendix C.

WAC 173-26 is characterized in Chapter 6, Comparative Impact Analyses.

The Guidelines Commission determined that in all areas of the guidelines it is beneficial to give policy direction, while in other areas additional specific standards may be optimal. The Performance Standards Alternative is a compilation of policies and standards. If written effectively, a rule using performance standards provides local government with adequate flexibility to adapt a master program to local conditions as well as demanding a high level of certainty for environmental protection. Alternative D sets goals, but allows local governments to set their own course to reach these goals. This approach allows flexibility to enable local governments to develop customized master programs and it demands a high level of certainty for effective environmental protection.

Subsequent to the Guidelines Commission, Alternative D was edited by Ecology in response to comments received from local governments, the general public, and other interested parties. As described in Chapter 4 (Process of Developing Alternatives, Phase 4), Part IV was developed in response to needs for a more definitive expression, or statement, of the performance standards proposed by Ecology in the December 1999 draft.

Existing Status and Trends, and Anticipated Impacts

WAC 173-16

Chapters 5 and 6 characterize the status and trends for Washington's shorelines as they have developed under WAC 173-16, as experiencing varying degrees of degradation.

Riparian habitats have been altered or degraded by forestry and agricultural practices, and clearing for various urban and suburban lands uses. Stream channel hydrology and ecology has been altered for the worse and degraded. Wetlands loss continues, apparently at undiminished rates. Estuarine water quality is variable, and in places is substandard. Overall more commercial shellfish beds are being downgraded than are being upgraded due to ongoing pollution problems. As more and more people build larger and larger houses on and near unstable slopes the problems associated with landsliding become greater. Nearly two miles of Puget Sound shorelines are armored each year, adversely affecting beach and nearshore habitats, and the creatures which depend on those habitats for all or a portion of their life cycle.

What goes unsaid, however, is what Washington's shorelines would have become without the Shoreline Management Act (and other resource management and environmental protection legislation). Two examples of activities moderated or halted by the passage of the Shoreline Management Act and adoption of WAC 173-16 are over-water structures (as exemplified by multi-family residential construction in Seattle) and beach fills (as exemplified by residential beach filling on the shores of Hood Canal).

WAC 173-26

It is important to realize that adoption and implementation WAC 173-26 will not be a panacea. Development will continue to occur on Washington's shorelines, and therefore habitat loss and degradation will continue to occur. The rate of development is driven largely by the state of the economy — a robust economy tends to result in more development, and more expansive development projects. The conditions in the Puget Sound region of Washington during the past decade, and past few years in particular, bear out this statement of the obvious.

The rate of habitat loss and degradation is moderated by land use, environmental, and pollution control laws and regulations. The Shoreline Management Act functions in conjunction with a number of other state laws, the most important of which to this environmental impact statement are identified in Chapter 6

From reading the individual impact analyses of Chapter 6 one could gain the impression that WAC 173-26 will be only marginally effective in reducing the rate of habitat loss and degradation, and other undesirable environmental consequences of shoreline development and activities. The integrated effect of WAC 173-26 as a whole, however, is anticipated to have a synergistic effect, producing overall environmental benefits substantially greater than the sum of the parts.

To the extent that WAC 173-26 is more effective than is WAC 173-16 at moderating environmental impacts — and everything else being equal — future adverse effects on the shoreline environment will be less, likely substantially less. To the extent that WAC 173-26 is better integrated and coordinated with other land use, environmental, and pollution control laws and regulations than is WAC 173-16 (as it is), future adverse effects on the environment will be less.

WAC 173-26 contains a number of concepts wholly or explicitly lacking in WAC 173-16:

- ecological restoration of development sites undergoing re-development;
- vegetation conservation for the protection of shoreline habitats;
- explicit management of geologically hazardous areas, and to do so in concert with requirements of the Growth Management Act;
- explicit management of critical salt water habitats, and to do so in conjunction with shoreline management of adjacent areas;
- explicit management of riverine corridors, and to do so in especially in conjunction with protection of hydrologic and ecologic values; and
- explicit management for flood hazard reduction.

Two provisions of WAC 173-26 stand out in this respect.

The various requirements for ecological restoration of already-developed sites undergoing redevelopment will lead to real improvements in environmental conditions at discrete locations. With a robust economy, and a sufficient amount of redevelopment in proximity, real environmental gains are likely.

The requirements for vegetation conservation which apply more-or-less across-the-board to most shoreline developments will, more than any other provision in WAC 173-26, result in substantially lower rates of habitat loss and degradation from new development than any other element of the proposed rule.

Significant Areas of Controversy and Uncertainty, and Issues to be Resolved

There are no areas of controversy or uncertainty which can be resolved by environmental impact analysis.

This is not to say that there is no controversy or uncertainty associated with the proposed rule amendment.

Many, if not all, local governments are concerned over the uncertainty of adequate funding with which to implement the proposed rule amendment. Ecology shares these concerns, and has cooperated with local governments in seeking needed legislative appropriations. This is a fiscal issue, not one of environmental impact analysis.

Some local governments, as well as other parties, maintain that Ecology is not *required* to adopt updated guidelines. Ecology respectfully disagrees with this position (Fitzsimmons, 2000a, 2000b), citing RCW 90.58.020, RCW 90.58.060, and RCW 90.58.900. Similarly, others contend that Ecology is exceeding its authority in proposing this rule amendment; for the same reasons cited above, Ecology also disagrees with this contention. These are matters of statutory interpretation, not one of environmental impact analysis.

Finally, there is a measure of controversy and uncertainty over vegetation conservation for buffer widths. (See for example, news media attention to the issue, especially in Kitsap (Dunagan, 2000a, 2000b) and Skagit counties (Parr, 1999a, 1999b).) This state-wide, programmatic environmental impact statement cannot and does not address the fine details of buffer effectiveness for different specific purposes in different specific circumstances.

These issues must be resolved in a forum other than environmental impact analysis.

2 • Approach and Affected Environment

Introduction and Organization

This environmental impact statement (EIS) compares and analyzes the existing Washington state regulation for development of a local government shoreline master program (SMP) under WAC 173-16 adopted in 1972, with a proposed amendatory rule, WAC 173-26, Part III and Part IV. This is the first substantial amendment of the rules for development of an SMP. As discussed in Chapter 4, continued application of WAC 173-16 is Alternative A, the No Action Alternative required to be analyzed in an EIS. The proposed amendatory rule, WAC 173-26, Part III and Part IV, is Alternative D, the preferred alternative.

For the purposes of this Draft EIS the statutory elements of the environment (as defined by the State Environmental Policy Act (SEPA) rules (WAC 197-11-444)) have been organized into subjects more useful in discussing the Shoreline Management Act and the proposed rule amendment.

Habitat Scale Existing Conditions and Impacts Under WAC 173-16 (Chapter 5) are organized around the fundamental landscape features which come under the Shoreline Management Act: marine shorelines, stream and river shorelines, lake shorelines, and wetlands.

The Comparative Impact Analyses (Chapter 6) are organized around the features of the rule amenable to environmental impact analysis. That is, it is organized in accordance with the major sections of the draft rule. This chapter compares the No Action Alternative with the Preferred Alternative.

Integrated Analysis (Chapter 7) provides a discussion of how certain prominent aspects of the proposed rule are especially different in kind or quality from the features of the existing WAC 173-16.

The impact analyses are generalized: adoption of the proposed rule will have an indirect effect on the environment—it will simply require that local governments amend their local Shoreline Master Program in a manner consistent with the amended rule and the Shoreline Management Act, while also consistent with local circumstances. Direct environmental effects will be seen only when proposed projects are approved, constructed, and operated under the newly amended local master programs.

Approach to Analysis

As noted above, adoption of the proposed rule will have an indirect effect on the environment—it will simply require that local governments amend their local Shoreline Master Program (SMP). Each of the 39 counties and 206 cities which come under the SMA (see Appendix C) will, over a period of years, adopt an amended SMP, each somewhat different from all others, but all consistent with the new rule and the Shoreline Management Act. The actual effect of the proposed rule amendment and the resulting local SMPs on

the shorelines of the state will emerge immediately on parcels of land which are developed or redeveloped under an amended SMP. On a state-wide landscape scale, however, substantial effects may not be seen for decades. This environmental impact statement addresses landscape scale effects, not site-specific effects. During this time other obvious factors will be affecting Washington's shorelines: the economy, and the related pace of development; the manner in which recovery of ESA-listed salmonid species is regulated by federal agencies under the Endangered Species Act; how future legislatures address further integration of the Shoreline Management Act and the Growth Management Act; and other, unforeseeable factors.

The level-of-detail of this environmental impact state is therefore generalized and variable. The environmental impact analyses are stated in terms of an event horizon two to three decades in the future. This environmental impact statement does not address fiscal, economic, or other non-environmental issues. As required by the Administrative Procedures Act at RCW 34.05.328(1)(c), a separate *Evaluation of Probable Benefits and Costs* (Bafus, 2000) has been prepared.

Finally, readers should note one other document feature: in many instances we quote at length from other documents and publications. These 'long quotes' are indicated by indenting that text and printing it in a smaller typeface, just as is done in the following section which quotes the Shoreline Management Act. We do this where ever practical so you can read what the law says, not a paraphrase; so that you can read what another analyst wrote, not how we summarized it.

Affected Environment

The Shoreline Management Act extends shoreline management to "shorelines of the state" which are defined as:

> RCW 90.58.030 (2) (c) "Shorelines of the state" are the total of all "shorelines" and "shorelines of state-wide significance" within the state;
>
> (d) "Shorelines" means all of the water areas of the state, including reservoirs, and their associated shorelands, together with the lands underlying them; except (i) shorelines of state-wide significance; (ii) shorelines on segments of streams upstream of a point where the mean annual flow is twenty cubic feet per second or less and the wetlands associated with such upstream segments; and (iii) shorelines on lakes less than twenty acres in size and wetlands associated with such small lakes;
>
> (e) "Shorelines of state-wide significance" means the following shorelines of the state:
>
> (i) The area between the ordinary high water mark and the western boundary of the state from Cape Disappointment on the south to Cape Flattery on the north, including harbors, bays, estuaries, and inlets;
>
> (ii) Those areas of Puget Sound and adjacent salt waters and the Strait of Juan de Fuca between the ordinary high water mark and the line of extreme low tide as follows:
>
> (A) Nisqually Delta—from DeWolf Bight to Tatsolo Point,
>
> (B) Birch Bay—from Point Whitehorn to Birch Point,
>
> (C) Hood Canal—from Tala Point to Foulweather Bluff,
>
> (D) Skagit Bay and adjacent area—from Brown Point to Yokeko Point, and

(E) Padilla Bay—from March Point to William Point;

(iii) Those areas of Puget Sound and the Strait of Juan de Fuca and adjacent salt waters north to the Canadian line and lying seaward from the line of extreme low tide;

(iv) Those lakes, whether natural, artificial, or a combination thereof, with a surface acreage of one thousand acres or more measured at the ordinary high water mark;

(v) Those natural rivers or segments thereof as follows:

(A) Any west of the crest of the Cascade range downstream of a point where the mean annual flow is measured at one thousand cubic feet per second or more,

(B) Any east of the crest of the Cascade range downstream of a point where the annual flow is measured at two hundred cubic feet per second or more, or those portions of rivers east of the crest of the Cascade range downstream from the first three hundred square miles of drainage area, whichever is longer;

(vi) Those shorelands associated with (i), (ii), (iv), and (v) of this subsection (2)(e);

(f) "Shorelands" or "shoreland areas" means those lands extending landward for two hundred feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward two hundred feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter; the same to be designated as to location by the department of ecology. Any county or city may determine that portion of a one-hundred-year-flood plain to be included in its master program as long as such portion includes, as a minimum, the floodway and the adjacent land extending landward two hundred feet therefrom;

All the Washington's approximately 2,763 miles of marine shorelines come under the SMA, with their shorelines encompassing approximately 105 square miles.

The shorelines of the 758 lakes managed under the SMA (WAC 173-20) encompass approximately 81 square miles.

The shorelines associated with streams managed under the SMA (WAC 173-18) encompass approximately 750 square miles.[1]

The shorelines managed under the SMA constitute approximately 1.4 percent of the state's 66,582 square miles of land area.

A shoreline master program is required of all 39 counties of the state, and 210 cities (WAC 173-26-080); see Appendix C.

[1] It is more difficult to accurately measure the length of streams than the length of marine or lake shores, therefore the accuracy of the land area of shorelands associated with streams is very approximate; the value most likely lies within the range of 600 to 900 square miles.

3 • Authority and Need

This chapter first states the authorities for the proposed rule amendment found in the Shoreline Management Act. It then summarizes the need for the proposed rule amendment.

Authority

In adopting the Shoreline Management Act the legislature declared the following findings and basic state policy:

> RCW 90.58.020—Legislative findings—State policy enunciated—Use preference.
>
> The legislature finds that the shorelines of the state are among the most valuable and fragile of its natural resources and that there is great concern throughout the state relating to their utilization, protection, restoration, and preservation. In addition it finds that ever increasing pressures of additional uses are being placed on the shorelines necessitating increased coordination in the management and development of the shorelines of the state. The legislature further finds that much of the shorelines of the state and the uplands adjacent thereto are in private ownership; that unrestricted construction on the privately owned or publicly owned shorelines of the state is not in the best public interest; and therefore, coordinated planning is necessary in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property rights consistent with the public interest. There is, therefor, a clear and urgent demand for a planned, rational, and concerted effort, jointly performed by federal, state, and local governments, to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines.
>
> It is the policy of the state to provide for the management of the shorelines of the state by planning for and fostering all reasonable and appropriate uses. This policy is designed to insure the development of these shorelines in a manner which, while allowing for limited reduction of rights of the public in the navigable waters, will promote and enhance the public interest. This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life, while protecting generally public rights of navigation and corollary rights incidental thereto.

The Shoreline Management Act charges Ecology with periodically reviewing and amending guidelines for implementing the SMA as directed by the 1995 legislature in ESHB 1724 which amended the SMA at RCW 90.58.060:

> RCW 90.58.060—Review and adoption of guidelines—Public hearings, notice of—Amendments.
> (1) The department shall periodically review and adopt guidelines consistent with RCW 90.58.020, containing the elements specified in RCW 90.58.100 for:
>
> (a) Development of master programs for regulation of the uses of shorelines; and
>
> (b) Development of master programs for regulation of the uses of shorelines of statewide significance.
>
> (2) Before adopting or amending guidelines under this section, the department shall provide an opportunity for public review and comment as follows:
>
> (a) The department shall mail copies of the proposal to all cities, counties, and federally recognized Indian tribes, and to any other person who has requested a copy, and shall publish the proposed guidelines in the Washington state register. Comments shall be submitted in writing to the department within sixty days from the date the proposal has been published in the register.

(b) The department shall hold at least four public hearings on the proposal in different locations throughout the state to provide a reasonable opportunity for residents in all parts of the state to present statements and views on the proposed guidelines. Notice of the hearings shall be published at least once in each of the three weeks immediately preceding the hearing in one or more newspapers of general circulation in each county of the state. If an amendment to the guidelines addresses an issue limited to one geographic area, the number and location of hearings may be adjusted consistent with the intent of this subsection to assure all parties a reasonable opportunity to comment on the proposed amendment. The department shall accept written comments on the proposal during the sixty-day public comment period and for seven days after the final public hearing.

(c) At the conclusion of the public comment period, the department shall review the comments received and modify the proposal consistent with the provisions of this chapter. The proposal shall then be published for adoption pursuant to the provisions of chapter 34.05 RCW.

(3) The department may propose amendments to the guidelines not more than once each year. At least once every five years the department shall conduct a review of the guidelines pursuant to the procedures outlined in subsection (2) of this section. [1995 c 347 § 304; 1971 ex.s. c 286 § 6.]

The 1992 Legislature adopted ESB 6128 amending the Shoreline Management Act regarding provisions for shoreline erosion protection for single family residences, especially regarding "timely protection against loss or damage" and giving "preference for permit issuance for measures to protect single family residences occupied prior to January 1, 1992, where the proposed measure is designed to minimize harm to the shoreline natural environment":

RCW 90.58.100 (6) Each master program shall contain standards governing the protection of single family residences and appurtenant structures against damage or loss due to shoreline erosion. The standards shall govern the issuance of substantial development permits for shoreline protection, including structural methods such as construction of bulkheads, and nonstructural methods of protection. The standards shall provide for methods which achieve effective and timely protection against loss or damage to single family residences and appurtenant structures due to shoreline erosion. The standards shall provide a preference for permit issuance for measures to protect single family residences occupied prior to January 1, 1992, where the proposed measure is designed to minimize harm to the shoreline natural environment. [1995 c 347 § 307; 1992 c 105 § 2; 1991 c 322 § 32; 1971 ex.s. c 286 § 10.]

Amendment of WAC 173-16 to incorporate the provisions of ESB 6128 was originally delayed pending the completion of research into appropriate erosion control measures, environmental impacts, and policy options (Canning & Shipman, 1994), and then further delayed to integrate ESB 6128-mandated amendments with those mandated by ESHB 1724.

Need

The *Report of the Shoreline Guidelines Commission to the Department of Ecology* dated February 16, 1999 states that the guidelines need updating for three principal reasons:

1. The Legislature has required that the guidelines be updated. The 1995 regulatory reform legislation, Engrossed Substitute House Bill 1724, stated in Section 1, that the Growth Management Act "...should serve as the integrating framework for all other land-use related laws." ESHB 1724 also established a schedule for local governments to review and update their plans and development regulations, with the next such cycle due September 1, 2002. If master programs are

to be integrated in accordance with ESHB 1724 in this cycle, the guidelines need to address integration issues well in advance of that date.

2. Population growth and changes in the law, planning practice, and use of science since 1971 are significant and require clearer guidance in the rule in order to achieve balanced and effective resource management.

In chapter 90.58.020 RCW the Legislature found "...that the shorelines of the state are among the most valuable and fragile of its natural resources and that there is great concern throughout the state relating to their utilization, protection, restoration and preservation…" and called for "...coordinated planning ... in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property."

The guidelines need to provide better direction to local governments for effective protection, restoration and preservation of natural resources and utilization of the shorelines, particularly with regard to conflict among uses preferred in the Act.

3. A premise of the Governor's Salmon Recovery Strategy is to use existing laws to comply with the Endangered Species Act. Since salmon depend on many areas and resources within the jurisdiction of the Shoreline Management Act for their survival, the guidelines need to show how local master programs can help implement the strategy to recover salmon and their habitat.

The Tri-County Urban Issues ESA Study (R2 Resource Consultants, et al., 2000), commissioned by the Tri-County SEA Response Effort, evaluated a number of regulatory programs pertinent to salmon recovery and concluded the following with respect to the Shoreline Management Act:

Local Shoreline Master Programs draw special attention to development within 200 feet of the shoreline and allow for broad conditioning authority to protect the shoreline ecosystem and salmon habitat. However, permit exemptions for single family residences, and for piers, docks, and bulkheads accessory to single-family residences that are valued at less than $10,000 (for freshwater locations) or less than $2,500 (for saltwater locations) contribute to cumulative adverse effects on shoreline ecosystems. Permit review is needed to ensure consistency with watershed plans that address the cumulative adverse effects that can result from dense, single family development along shorelines containing critical salmon habitat. Additionally, there has been considerable latitude in interpretation of some of the definitions in the current shoreline master program guidelines. Best available science has not always been applied, and performance criteria that are desirable for salmon recovery have not always been clearly specified.

Local Shoreline Master Programs could be improved in a number of ways. Shoreline modification could be limited only to areas where modification is necessary to support a permitted use. Permitted activities should be geared toward reducing adverse affects and modifications to salmon habitat, and modifications should be allowed only where appropriate for a specific type of shoreline. Preferences should be given to modifications that result in lesser impacts on salmon and that will enhance ecological functions and values. Cumulative impacts on the riparian zone of exempt private structures could be addressed by requiring contributions to a restoration and/or enhancement bank. Where joint-use private docks are encouraged, laws regarding neighbor liability need to be changed to provide incentives. As the Shoreline Master Program Guidelines are modified, they should take into account current laws and technology that did not exist in the past.

4 • Alternatives

This chapter first summarizes the process Ecology pursued in arriving at the alternative approaches to updating the Shoreline Master Program Guidelines rules, and then summarizes the alternatives considered by Ecology and its advisory committees. The "No Action" alternative required to be evaluated by SEPA is continued application of the existing rule, WAC 173-16. Three other alternatives were considered: Alternative B – Prescriptive Standards; Alternative C – Policy Guidance; and Alternative D – Performance Standards. During the winnowing process (see below) alternatives A, B, and C were considered and rejected relatively early in the process. Alternative D then emerged as the preferred alternative. As Alternative D was further developed, elements of the other alternative approaches were incorporated where deemed appropriate.

In simple, colloquial terms, prescriptive standards might be thought of as: "You shall do this, and you'll do it this way." Policy guidance might be thought of as: "You shall do something like this, and figure out for yourself how to get there." Performance standards might be though of as: "You shall do something like this, and we've provided some guidance on performance deemed to meet the goals."

This chapter discusses and analyzes the alternatives at varying levels of detail, consistent with the detail to which the alternatives were developed. More detailed analyses are found in Chapter 6 for Alternatives A and D.

Process of Developing Alternatives

The process of developing an amendment of the shoreline master program guidelines rule occurred in four phases over a period of eight years as follows.

Phase 1: 1992 - 1994

Ecology first began considering the desirability of amending the shoreline master program guidelines rule in the context of regulatory reform in 1992. That autumn, an informal Regulatory Reform Committee was convened by Ecology, including representatives from Clark, Cowlitz, Douglas, Kittitas, and Thurston counties, and the cities of Anacortes, Bremerton, Issaquah, and Seattle. The committee's report, dated March 1993, formed the basis of Ecology's recommendations to then-Governor Lowry's Task Force on Regulatory Reform.

Also beginning in 1992, Ecology embarked on what became a 2-year process to work with, and assist local governments in integrating provisions of the Shoreline Management Act with the newly enacted Growth Management Act, including the GMA's requirements for local adoption of Critical Area Ordinances. This effort culminated in the release of the 2nd edition of the *Shoreline Management Guidebook* (Shorelands and Coastal Zone Management Program, 1994), which included guidance on integrating growth management with shorelines management.

Phase 2: 1995 - 1998

The 1995 Legislature adopted ESHB 1724 ("…an act relating to implementing the recommendations of to governor's task force on regulatory reform on integrating growth management planning and environmental review…"), including a provision amending the SMA (RCW 90.58.060) which directs Ecology to "periodically review and adopt guidelines" for local shoreline master programs consistent with SMA policy, and "at least once every five years…conduct a review of the guidelines."

In response, Ecology initiated a process to develop shorelands and growth management integration rules and technical assistance materials. Early steps included meeting with local government planners and discussing needs and alternative approaches; contracting with the Social and Economic Sciences Research Center at Washington State University for a public opinion survey on shoreline use and management; and preparing a conceptual draft of a new Guidelines rule.

The 1996 public opinion survey (Social and Economic Sciences Research Center, 1996) was modeled on a 1983 public opinion survey (League of Women Voters, 1983) to enable comparisons across the decades; both surveys addressed fundamental questions on how the public perceives the state's shorelines and shoreline management. The 1996 survey was designed to enable statistically valid comparisons of western Washington and eastern Washington opinions, a feature lacking in the 1983 survey.

When asked about their preferred shoreline uses, people tended to have high-to-medium priorities for wildlife habitat (94%), public parks (93%), and fish farming (71%). Conversely, they registered low or no priority for marinas (58%), industry (76%), shops or restaurants (62%), office buildings (90%), and apartments and condominiums (83%). Priorities for agriculture was pretty evenly split: 51% for a high-to-medium priority, and 49% for a low or no priority rating. Eastside and westside opinions were similar. (Canning, 1997b.)

When asked "Is there too much development on shorelines?" 54% said "Yes" with no significant difference between eastside and westside opinions. This represents a shift in opinion since 1983 when the predominate opinion on the intensity of shoreline development was "about right." (Table 4.1; Canning, 1997b.)

Table 4.1 Amount of Development on Shorelines

Opinion	1983	1996
Too Little	6%	7%
About Right	46%	39%
Too Much	36%	54%
No Opinion or Don't Know	12%	0%

People tended to have high-to-medium priorities for flood hazard reduction (84%), habitat maintenance (98%), provision of public access (87%), recreation (82%), and protection of

wetlands (87%). Conversely, they registered low or no priority for providing for residential development (73%) or providing for commercial development (77%). Opinions on providing for port and industrial development was closely split at 51% for a high-to-medium priority and 49% for a low or no priority. There were no meaningful eastside–westside differences. (Social and Economic Sciences Research Center, 1996; Canning, 1997b.)

Between December 1995 and April 1996 Ecology conducted outreach on the mandated rule amendment and regulatory reform measures:

- a December 1995 questionnaire sent to 230 local governments resulted in a 12% return;
- facilitated focus groups held in Everett, Longview, Moses Lake, and Tacoma in February and March 1996 were attended by 120 persons representing local government, port districts, Indian tribes, environmental organizations, and business and industry; and
- Ecology co-sponsored the April 1996 Planning Association of Washington conference in Spokane where 23% of the planners present attended a special session to discuss the proposed shoreline master program guidelines rule update.

Based upon comments received throughout the outreach process, Ecology formed a Shorelines Policy Advisory Group (SPAG) in May 1996 composed of entities representing a broad range of interests including county and municipal government, environmental organizations, business and industry, and agriculture. The SPAG was charged with assisting Ecology in drafting an amended shoreline master program guidelines rule based upon a discussion draft released on July 1996. The SPAG meet throughout the summer, and a draft amended rule was released for informal comment in October 1996. Some 750 copies of the discussion draft were distributed state-wide. The initial comment deadline of January 31, 1997 was extended to March 3, 1997. The October 1996 draft rule amendment consisted of proposed SMA – GMA integration and regulatory reform measures (largely procedural in nature), and substantive amendments of a "policy guidance" nature (see Alternative C: Policy Guidance).

During early 1997 Ecology also briefed the Land Use Study Commission (LUSC; created by ESHB 1724) on the October 1996 discussion draft rule amendment. The LUSC appointed a subcommittee to review the October 1996 draft and consult with Ecology. The subcommittee met for approximately one year. The subcommittee reached no consensus on substantive changes to the October 1996 draft, and recommended that Ecology proceed with amending the shoreline master program guidelines rule within a framework which included an advisory Guidelines Commission.

Phase 3: 1998 – 2000

The Guidelines Commission was convened under the authority of Governor Locke, and was active from July 1998 through January 1999. The following description of the Commission's work is taken from the Report of the Shoreline Guidelines Commission to the

Department of Ecology by the Commission's Chairperson and Facilitator (Somers & Arthur, 1999).

> In June 1998, Governor Gary Locke invited representatives of various interest groups to serve on the Guidelines Commission that the Department of Ecology was forming. Commission members included representatives from counties, cities, ports, business, environmental groups, tribes, and state agencies. Although invited, the Association of Washington Business and the agricultural community declined to participate.
>
> The Guidelines Commission met over 20 times between July 7, 1998 through January 11, 1999. The Commission sought to build on previous efforts to revise the guidelines and integrate the Growth Management Act and the Shoreline Management Act. As a starting point, the Commission focused on a list of issues identified by the Land Use Study Commission (LUSC). After reviewing this preliminary list, the Commission added a number of other related issues.
>
> The Governor's Joint Natural Resources Cabinet (JNRC) asked that the Commission give a progress report to JNRC by September 1. On October 13th, 1998, the Commission Chair Dave Somers met with JNRC and provided an update of the progress of the Commission. At that time the Commission expressed a desire to continue working on guideline recommendations. JNRC supported this extension of time and indicated that the Commission should prioritize revisions related to salmon recovery.
>
> The Commission was an advisory body. Members sought consensus, but understood that where they could not achieve it, Ecology would develop language to put forth as part of a proposed rule. Individual Commission members were responsible for consulting between meetings with representatives of their "constituencies."
>
> At the last meeting, held January 11, members reviewed Ecology's last working draft, dated December 30, 1998. The Chair, assisted by the facilitator, noted those portions of the draft that had consensus support of the Commission and also noted any unresolved issues. This report summarizes the work of the Commission and has the support of all members except where noted. In those exceptions the report attempts to describe the nature of each unresolved issue so that Ecology understands clearly what issues do not have consensus support of the Commission members.

The Guidelines Commission's report noted that the existing Guidelines (WAC 173-16) "need updating for three principal reasons" — [1] the legislative mandate in ESB 1724; [2] population growth and advances in the underlying science, and [3] the Governor's Salmon Recovery Plan. Please refer to Chapter 3, Authority and Need, where the Commission's statement is quoted in its entirety.

The Commission's work resulted in the draft shoreline master program guidelines issued by Ecology for formal public comment in April 1999. Due to an unusually high level of public interest, the original June 21, 1999 deadline for comments was extended to August 4, 1999, and five more public hearings were scheduled.[2]

In response to the more than 2,500 comments[3] received on the April, 1999 draft guidelines, Ecology withdrew the April 1999 draft rule and developed and released a "working

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[2] A total of nine public hearings were held in Ellensburg, Spokane, Olympia, Seattle, Okanogan, Pasco, Bellingham, Montesano, and Vancouver. The Shoreline Management Act requires that four public hearing be held.

[3] Many of the comments were duplicative. For example, approximately 1,000 copies of a form letter were received regarding regulation of residential shoreline armoring.

draft" of a alternative guidelines rule incorporating many of the comments received on the April, 1999 release. The working draft was released for informal public comment in December, 1999, and a notice of availability was mailed to everyone who commented on the April, 1999 version. This December, 1999 release was used as a basis for discussions with concerned legislators, local government elected and appointed officials, and other interested parties. Informal comments on the December, 1999 release were accepted through March 1, 2000.

Phase 4: 2000

Some of the local government comments on the December 1999 draft rule version indicated a growing awareness of and concern over the impending "Section 4(d) rules"[4] to be adopted by the National Marine Fisheries Service (NMFS) and the US Fish and Wildlife Service (USFWS), collectively known as "the Federal Services" or simply "the Services") pursuant to the listing of various salmonid species and ESUs[5] under the Endangered Species Act. Some comments expressed concern that Ecology's draft rule was getting out in front of the Services, and thereby was prematurely second-guessing the Federal Services' potential standards for shoreline development. Conversely, other comments expressed concern that Ecology was not getting out in front on the issue, thereby likely proposing an amended rule which would be incompatible with the impending 4(d) rule. Yet other comments pointed out that not all shorelines regulated by local governments were under an ESA listing.

As Ecology explored the contradictory comments, a dual path approach evolved. The December 1999 draft rule would be edited to respond to the direct comments on general as well as specific features, maintaining the "performance based standards" approach. This came to be known as "Path A" in colloquial terms (not to be confused with Alternative A in the terminology of this EIS). On a parallel track, in discussions with the Federal Services (and other parties), a "Path B" approach began to evolve which would be more definitive than path A.

Ecology's rule development team has issued the following statement regarding the dual path approach:

> **Shoreline Master Program Guidelines & the ESA**
>
> - The Shoreline Management Act confers broad procedural and substantive authority on the Department of Ecology with regard to the development and approval of locally prepared shoreline master programs and amendments thereto.

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[4] The 4(d) rule is issued by the federal government and lists "do's" and "don'ts" for protecting threatened salmon. The rule is named after a section of the Endangered Species Act and prohibits the "taking," or harming, of protected salmon or their habitat. Violating the rules spelled out in the 4(d) rule could leave the violator open to federal fines and other penalties. The proposed rule may also list certain activities that can continue without violating the law. (Definition taken from the Tri-county Endangered Species Act web page at http://www.salmoninfo.org/tricounty/QandA.htm)

[5] ESU: "evolutionarily significant unit" — a terminology used to indicate a "distinct" population of Pacific salmon, and therefore a species as defined under the Endangered Species Act.

- The possible approaches to updating the Guidelines under the SMA can be viewed as a continuum, ranging from an extremely flexible approach with almost no guidance to aid local governments in drafting a consistent SMP, to an extremely prescriptive approach with no room for local governments to adjust for regional characteristics and needs. Most viable approaches to the Guidelines fall somewhere between these two extremes.
- The SMA sets a floor on the level of flexibility the Guidelines can include: at a minimum, the Guidelines must address the elements listed in RCW 90.58.100.
- So long as the guidelines are within the authority of the SMA and consistent with the policy of the act (RCW 90.58.020), the statute does not set a maximum ceiling on the level of prescriptiveness contained in the Guidelines.
- There are a variety of methods available to satisfy the requirements of the federal Endangered Species Act (ESA) with regard to shoreline uses and activities. These include specific reference to the guidelines in the section 4(d) rule ultimately adopted by the federal services (NMFS and USFWS), which can grant an exception from the definition of "take." Any shoreline use or activity that creates a take will be illegal unless allowed by a 4(d) rule exception or alternatively, through an incidental take authorization issued after completion of a section 7 consultation with the federal services. The services and Ecology are committed to pursuing these approaches (see letters to Tom Fitzsimmons of Ecology from both services dated May 22nd, 2000) to ensure that shoreline uses and activities conducted in accordance with the new guidelines and the updated SMPs will be insulated from liability under the ESA.
- The SMA provides sufficient authority to incorporate the requirements of the ESA related to shoreline uses and activities regulated by the act, within the SMP Guidelines. This result can be achieved by following a more specific model.
- Past experience in shorelines management tells us that flexibility is needed to carry out SMA objectives given the range of shoreline conditions and environments that exist in Washington State, and the fact that the SMA applies to areas with listed species as well as to areas with no listed species. NMFS and USFWS suggest that more certainty is needed however, to ensure ESA compliance. Hence, a two path approach is proposed.

Two Path Rule: Structure & Effect

- One rule amending WAC 173-26, consisting of two distinct parts: Path A and Path B (shown in the draft rule as Parts III and IV respectively). The two paths may yield different local SMP structure and content, but both would fully comply with requirements of the Shoreline Management Act.
- Path A would set forth mandatory minimum procedures and performance based standards, but would allow local governments the flexibility to decide how to achieve the performance standards.
- All local governments currently covered by the SMA would have to update their SMPs either according to Path A or Path B. They must choose one or the other.
- Nothing in Path A would preclude local governments from negotiating with the Services' their own approach to satisfying ESA requirements. Again, the SMA sets the floor, not the ceiling regarding the level of compliance required for shoreline development.
- Path B is the result of collaboration with NMFS and USFWS, providing specific means for satisfying ESA requirements. Path B has the added benefit of providing local governments the up-front certainty that, if they follow its requirements, their SMPs and local shoreline development approvals will be insulated from liability under the ESA. Path A would not provide such certainty.

- Use of Path B by local governments will be voluntary.
- Regardless of whether a local government proceeded under the requirements of Path A or opted to revise its master program according to Path B, Ecology would review the amendments pursuant to RCW 90.58.090.
- Ecology's decision to approve or deny a revised master program could be appealed to the Growth Management Hearings Board.

Path A and Path B are considered to be synonymous: Path B is simply offers a more "definitive" expression of the "performance based standards" expressed in Path A. The Federal Services have issued statements indicating that a Section 4(d) exception and/or Section 7 incidental take statement could likely be granted for Path B in the future.

In the proposed amendment of WAC 173-26, Path A is contained in Part III, and Path B is contained in Part IV.

Alternative A: No Action
Continued Implementation of Existing WAC 173-16

Continuing to use the existing Shoreline Mater Program Guidelines rule (WAC 173-16) is the 'no action alternative.' That is, if no action were taken, WAC 173-16, adopted in 1972, would remain in affect, governing the content of local Shoreline Master Programs. WAC 173-16 is characterized in Chapter 6, Significant Impacts, for analytical comparison with the preferred alternative

Environmental Protection

The current shoreline master program guidelines rule no longer provides an adequate level of environmental protection to meet the intent of the SMA. Existing conditions and trends in shoreline jurisdiction are not acceptable for salmon recovery or for protection of the natural ecological functions of the shorelines of the state. Sections of the guidelines addressing natural systems and use activities have not proven to be adequate in protecting shoreline ecological functions. With continued implementation of the No Action alternative, it is fair to expect current trends in shoreline management to continue. These trends would include a net increase in shoreline armoring, an increase in development within shoreline jurisdiction, continued degradation of water quality, and a continued net loss of shoreline habitat[6].

Much has been learned about the physical and biological character of Washington's shorelines since 1972. Since adoption and initial implementation of the Shoreline Management Act, studies have been conducted for example, on the ecological importance of near shore areas, shoreline morphology, and the needs of wild salmonids. These studies have indi-

[6] Obviously, the "trends" are variable when viewed locally. One the one hand, an increase in the intensity and density of shoreline development will lead to a continuation or even worsening of adverse effects in some locales. On the other hand, some local governments have adopted updated master programs which in some respects provide improved shoreline management leading to a stabilization or even improvement of effects trends.

cated that the cumulative impacts of shoreline modifications are adversely impacting the productive capacity of the state's waters (see Chapter 5, Habitat-scale Existing Conditions & Impacts Under WAC 173-16.

The 1972 Guidelines were based on science dating from the 1960s that identified the adverse impacts of dumping, dredging, filling, channelizing, etc. These were the result of large-scale projects with far-reaching and visible impacts. To varying degrees, the SMA has been a success in controlling most of these impacts while allowing important economic development to continue.

The issue now is that we continue to lose shoreline resources as a result of the cumulative impact of many small scale and dispersed projects on the shoreline. As more and more shoreline is developed, the native vegetation is removed and the physical character of the shoreline is changed. The wildlife that is dependent on those physical and biological characteristics are eliminated. The policy of the SMA is to "protect against adverse effects to… the land and its vegetation and wildlife," and on shorelines of statewide significance (SSWS) to "preserve the natural character" and "protect the resources and ecology" of the shoreline. These policies are not adequately addressed by the current guidelines and thereby are not adequately addressed by most of the SMPs in effect today.

State and Local Responsibility

Without an update of the guidelines, the roles of the state and local governments would remain as they are today. The state government would continue to administer the SMP guidelines to meet the directives of the SMA. The state would also continue with its role of providing technical assistance, when available, to local governments. Local jurisdictions would follow the existing guidelines to write and amend their master programs and the Department of Ecology would be required to review and approve the SMPs consistent with the current guidelines. The state could increase enforcement efforts to make local governments better comply with the existing guidelines.

SMA-GMA Consistency

This section assesses consistency with various aspects of the Growth Management Act, the Shorelines Management Act, and other laws.

Consistency with GMA

At the broad policy level, the SMA and the Growth Management Act (GMA; RCW 36.70A)) are compatible and consistent.

However, as a result of the 1995 amendments to the GMA, the local master program policies are an element of the local comprehensive plan and the master program regulations are part of the local development regulations. RCW 36.70A.070 further requires:

> The comprehensive plan of a county or city that is required or chooses to plan under RCW 36.70A.040 shall consist of a map or maps, and descriptive text covering objectives, principles, and standards used to develop the comprehensive plan. The plan shall be an internally consistent document and all elements shall be consistent with the future land use map. A comprehensive plan shall be adopted and amended with public participation as provided in RCW 36.70A.140.

Therefore, within the SMP Guidelines, there are issues related to GMA policy, process and terminology that need to be addressed to facilitate local SMA planning in the context of the GMA.

The most basic issue is that WAC 173-16 does not acknowledge the policies and requirements of the GMA. The guidelines were written from the perspective that no comparable state level planning requirements applied. In circumstances where a balancing of planning interests is required, the Guidelines provide no guidance to local government and a very limited basis for Ecology to properly consider such interests. This increases the opportunity for conflict between the local government, Ecology and other interested parties.

The Department of Community, Trade, and Economic Development (DCTED) has adopted minimum criteria for compliance with GMA (WAC 365-190 and 195). To varying degrees, these criteria address topics of interest in SMA implementation. While there is some consistency in purpose between the GMA procedural criteria and the SMP guidelines, there are significant overlaps and inconsistencies between the two regulations. An example of this is the public participation requirements. Both regulations include extensive specific requirements. The requirements are not the same and are not completely compatible.

The use of terms presents opportunities for misunderstanding. Some terms such as “urban” and “rural” have specific meanings in each that are not directly compatible and lead to misunderstandings. Others, such as “element” are used similarly, but still create confusion. The policies of the local master program are an element of the comprehensive plan as designated by the GMA. The SMA requires that a local master program contain several specific elements addressing certain subject areas.

Consistency with SMA

Since 1972 the SMA, and the way it is implemented, has changed. Statutory changes have been made to definitions and to other provisions. Implementation has evolved substantially in response to changes in other law (such as the GMA), Shorelines Hearings Board (SHB) decisions and court cases, and through day to day experience. At the time the guidelines were written, no one had ever written a shoreline master program. Most of the original master programs bear strong resemblance to the guidelines. Some communities have taken new approaches to SMP organization in their SMP updates which appear to provide more effective management.

Aside from the requirements of ESHB 1724, two amendments to the SMA require amendments to the guidelines. In 1991, as a part of flood related legislation, a provision was added requiring a flood prevention element in all master programs (RCW 90.58.100(2)(h)). In 1992, a provision was added requiring master programs to incorporate shoreline erosion protection requirements (RCW 90.58.100(6)). Work was underway to do both of these amendments in 1995. However, the 1995 changes to the SMA suggested a more comprehensive approach and so those single purpose amendments were incorporated into the overall effort to update the guidelines.

Shorelines of Statewide Significance

The SMA establishes certain shorelines as being of greater importance than others, from a statewide perspective. Shorelines of statewide significance (SSWS) are established in the SMA with a variety of criteria and applicability. They generally include the marine waters, some of the tidelands and uplands adjacent to the marine waters, and the larger lakes and streams and the lands adjacent to them. Special policies are established for SSWS in RCW 90.58.020. The SMA identifies a requirement for development of guidelines for SSWS, separate from other shorelines. The SMA also requires that Ecology assure that the SMP provide for "optimum implementation of the policy of this chapter to satisfy the statewide interest" when making a decision on a local master program as it applies to SSWS. The SMA also establishes different criteria for review of master programs by the Growth Management Hearings Boards and SHB when SSWS are involved. (RCW 90.58.190).

Shoreline Uses

The 1972 Guidelines were oriented toward management of typical shoreline uses of the time. Resource based industries dominated the industrial waterfront and international trade was limited and tied to the resource industries. Vacation homes were scattered along the shoreline.

The way we use shorelines has changed dramatically. International trade, recreation, and multiple use developments now dominate the urban waterfront. Residential uses have proliferated and changed in character. Most shoreline residences are now full time residences. Redevelopment of residential sites is common with large homes replacing cabins. Instead of houses scattered along the shoreline, there is continuous residential development along many if not most of our lakes and marine waters with only scattered undeveloped land. The cumulative impact of continuous residential development on the shoreline was not adequately addressed by the guidelines.[7]

Issues such as brownfields redevelopment, sediment contamination clean-up, habitat restoration, mitigation banking and dredged material management have emerged and require a flexible approach. While the intent behind such activities is clearly consistent with the overall intent of the SMA, the guidelines, and the existing master programs, have often been an impediment to such projects because the guidelines do not address them.

Impacts on Permit Processing

RCW 90.58.140 requires that a shoreline permit may only be issued when it is consistent with the approved local master program and the SMA. The guidelines were intended to form the basis for approval of master programs and are only directly applicable to permits in very limited circumstances.

The effect of maintaining the existing guidelines is then a secondary effect. Approximately 50 % of the master programs statewide have never been amended; over 80% have not had significant amendments or been rewritten. As a general matter, these programs reflect the deficiencies identified above as applicable to the guidelines. Thereby, a project proponent

[7] Ecology recognized this trend in the mid 1980s and developed guidance materials to deal with it but these materials are not incorporated into the Guidelines.

cannot rely on the provisions of the SMP as assuring compliance with the policy of the SMA, encounters confusion between GMA and SMA requirements and may receive contradictory guidance from various local and state agencies. This leads to uncertainty and delays in permit processing. Further, where a project proponent seeks approval to do clean-up, restoration, or otherwise to employ innovative approaches to environmentally sound development, the master program is likely to be an impediment.

Consistency with Other Statutes

The land and water areas within the jurisdiction of the SMA are also the subject of other regulatory programs at the local, state and federal level, including, but not limited to:

- Local: Zoning, Subdivision, Critical Areas, Flood Plain, Clearing and Grading;
- State: Hydraulics Code, Forest Practices Act, Surface Mining, Water Pollution Control Act, Water Code; and
- Federal: Clean Water Act, Rivers and Harbors Act, Endangered Species Act.

While all of these have common interests with the SMA, none of them are intended to address the specific policy interests of the SMA in a comprehensive manner.

Critical area regulations and local SMPs address common geography and subject matter. All of the types of critical areas occur at least partly within SMA jurisdiction and two (shellfish beds and kelp and eelgrass areas) occur only within SMA jurisdiction.

Salmon Habitat

The 1972 guidelines do not have specific measures to respond to ESA listings or to contribute to meeting its objectives and, in fact, were written prior to the ESA itself. The 1972 guidelines were written to protect the environment of the shoreline while promoting preferred and water-dependent uses. When translated into specific shoreline master program language, these uses are often in conflict with habitat protection.

Statutory Directive

Maintenance of the current guidelines as found in WAC 173-16 is presented here as the No Action Alternative required by the State Environmental Policy Act (SEPA). The legislature, however, has precluded a ‘no action’ outcome: as noted above, ESHB 1724 requires Ecology to update the guidelines at least once every five years.

Alternative B: Prescriptive Standards

The Guidelines Commission (1998 – 1999) considered developing new guidelines with specific prescriptive standards. This alternative approach would result in a rule with specific numerical standards, effective state-wide, that set minimum requirements for local governments to achieve through their local SMPs for the full range of shoreline uses. This alternative approach was considered early in the Commission’s process, and discussed repeatedly throughout the Commission’s term. No consensus was ever reached by the

Commission members that Prescriptive Standards were a desirable or viable approach despite the passionate support for this pathway by some Commission members.

In consultation with local government representatives, Department of Ecology staff learned that while some local planners supported prescriptive standards, others viewed them as too restrictive and counter-productive.

In the end, Ecology determined that Prescriptive Standards were not a viable alternative for lack of broad support, and chose not to pursue this alternative.

Environmental Protection

Prescriptive standards would provide highly specific direction to local governments with a strict test for compliance. These criteria could allow for less flexibility and creativity in the planning process, but could ensure consistent management of shoreline resources across jurisdictions. However, Washington's shoreline environments are extremely diverse. Setting strict prescriptive standards across the board could be very complex and difficult to administer.

State and Local Responsibility

Prescriptive standards would result in a considerable reduction in local government's autonomy and authority to prepare individualized master programs. Each local jurisdiction would be required to write master programs to meet the state-prescribed standards. The state may need to assume a greater responsibility for monitoring and enforcing compliance on the local level. Non-complying jurisdictions would require state assistance and technical support. The relationship between local governments and the state could become contentious over staffing and funding issues for inventories and monitoring and applicable standards. Cooperation between local and state government may be difficult to maintain.

SMA-GMA Consistency

The Prescriptive Standards Alternative was rejected by the Guidelines Commission for further study before it could be developed to a level-of-detail sufficient to assess consistency between SMA and GMA.

Salmon Habitat

Historically, either prescriptive standards or an effective performance based approach is essential in species recovery programs. Prescriptive standards could be a definitive approach to meet the objectives of the state's salmon recovery program if sufficient regional versatility were incorporated into the rule. The Guidelines Commission judged that the needed regional versatility could be better achieved through a Performance Standards Alternative.

Alternative C: Policy Guidance

The Shorelines Guidelines Commission also considered using a general policy approach that would provide guidance to local governments and flexibility to implement individual

SMPs at the local level. However, as with Alternative B, Prescriptive Standards, no consensus could be reached that Policy Guidance was a viable approach, and eliminated from detailed study early in the Commission's process.

Environmental Protection

A general policy approach would provide the greatest flexibility to local governments to develop a localized SMP that would address issues of local concern. Policy level guidelines would direct local jurisdictions to protect environmental functions in shoreline areas. However, because a policy-oriented set of guidelines would not include standards, a lesser level of certainty for environmental protection would result. Policy oriented guidelines would not include tests for compliance. Also, there would be no certainty for consistent management between neighboring jurisdictions, which could result in ineffective management of shoreline resources on a system-wide, or watershed scale.

State and Local Responsibility

With policy level guidelines, the state's role as program reviewer and technical assistant would need to be expanded. The state would continue to address local plans on a case by case basis. State support for guidance, technical assistance, and, in many cases, planning expertise would be a necessity. For those local jurisdictions with minimal funding or planning staff, the state would need to provide adequate support, both technical and monetary, to enable them to produce effective individualized SMPs. The local governments' roles would also be expanded. With a higher level of flexibility, the local jurisdiction would be positioned to develop a customized SMP. This effort would require planning and policy development.

SMA-GMA Consistency

Alternative C would allow for consistent integration of SMA and GMA. Much like in Alternative D, policy guidance would provide local governments with the ability and the direction to integrate their planning efforts, reduce unnecessary duplication in the planning process, and develop consistent language for the local plans.

Salmon Habitat

It is likely that a policy level approach would not help the state's efforts to comply with salmon recovery efforts. The increased level of flexibility given to local governments coupled with the lack of certainty in environmental outcomes would not be an effective mechanism in the statewide approach to salmon recovery. Without specific standards for recovery efforts, a system-wide or landscape approach would be virtually impossible.

Alternative D: Performance Standards

The preferred alternative, Performance Standards, is an amendment of WAC 173-26, incorporating two new sections, Part III and Part IV, each containing new guidelines for shoreline master programs, and voiding the existing shoreline master program guidelines in WAC 173-16.

As described in Chapter 4 (Process of Developing Alternatives, Phase 4), Parts III and IV are dual paths to achieving the same results under the Shoreline Management Act. Part III sets forth "mandatory minimum procedures and performance based standards, but would allow local governments the flexibility to decide how to achieve the performance standards." Part IV, on the other hand, provides greater specificity to aid local governments in developing a master program that achieves the performance standards.

All local governments required by the SMA to adopt a shoreline master program (SMP) will be required to amend their existing SMP in accordance with Part III, or alternatively, at their choice, under Part IV.

WAC 173-26 is characterized in Chapter 6, Comparative Impact Analyses.

The Guidelines Commission determined that in all areas of the guidelines it is beneficial to give policy direction, while in other areas additional specific standards may be optimal. The Performance Standards Alternative is a compilation of policies and standards. If written effectively, a rule using performance standards provides local government with adequate flexibility to adapt a master program to local conditions as well as demanding a high level of certainty for environmental protection. Alternative D sets goals, but allows local governments to set their own course to reach these goals. This approach allows flexibility to enable local governments to develop customized master programs and it demands a high level of certainty for effective environmental protection.

Subsequent to the Guidelines Commission, Alternative D was edited by Ecology in response to comments received from local governments, the general public, and other interested parties. As described in Chapter 4 (Process of Developing Alternatives, Phase 4), Part IV was developed in response to needs for a more definitive expression, or statement, of the performance standards proposed by Ecology in the December 1999 draft.

Environmental Protection

Performance standards measure results. Alternative D would set high levels of environmental protection, but would not specifically direct a local government how to achieve this result. This allows locals flexibility, but does not relieve the need to meet the prescribed performance standards. Certain risks are inherent in making performance standards the method of determining environmental protection. One risk is the reactive nature of performance standards; compliance is not determined until after results have been attained. This could cause some concern. However, proper safeguards are available. The Department of Ecology will continue to review and approve master programs. If an SMP is inadequate, the department will not grant approval.

Part IV expresses performance standards for environmental protection in more definitive language than does Part III. While Part III and Part IV are both performance-based standards, the level of definition in Part IV is greater than in Part III. However, Part IV is still less prescriptive than Alternative B would be.

State and Local Responsibility

Alternative D is designed to allow maximum flexibility to local governments while concurrently requiring some specific standards from the state. This approach is designed to protect the essential ecological functions of the shoreline resources with predetermined standards. This level of specificity for critical resource protection gives local jurisdictions direct guidance and creates a simple test for compliance. Policy-level guidelines would be developed by the Department of Ecology to address resources and functions not governed with set standards. Policy guidance in the rule would consistently direct local governments toward a desired SMP goal without directing the means to the end. In Part IV, in certain instances, this policy direction is supplemented with more specific guidance on how to achieve the performance standards. This level of guidance will allow for innovative, flexible, and varied approaches that will be developed on a case-by-case level and created individually to meet the needs of the local jurisdiction. In the case of those jurisdictions which choose to plan under Part IV, there is an added level of specificity and certainty.

As is currently the case, Ecology will review all SMPs and approve those with acceptable environmental protection.

As with Alternative C, Policy Guidance, the state's role as program reviewer and technical assistant would need to be expanded. State support for guidance, technical assistance, and, in many cases, planning expertise would be a necessity. For those local jurisdictions with minimal funding or planning staff, the state would need to provide adequate support, both technical and monetary, to enable them to produce effective individualized SMPs. The local governments' roles would also be expanded. With a higher level of flexibility, the local jurisdiction would be positioned to develop a customized SMP. This effort would require planning and policy development.

SMA-GMA Consistency

Alternative D works to integrate the requirements of the SMA with those of the GMA for jurisdictions planning under the Growth Management Act. Alternative D provides measures to reduce administrative duplication, thereby allowing integration of elements of local plans and opportunities for enhancement of shoreline management through integrated planning efforts.

Salmon Habitat

Alternative D has the potential to effectively address the needs of Washington State's salmon recovery effort in shoreline areas. Performance standards would be set to protect and restore needed salmon habitat. These standards are measurable and could be held to a strict test for compliance. In this way, Alternative D is similar to a prescriptive standards approach. However, Alternative D has added flexibility for salmon recovery that could make implementation of local plans easier and more effective. For example, a local government, knowing it must reach a predetermined level of compliance with water quality or as an element of the state's salmon recovery effort, would have the added flexibility of determining how to implement a resource protection program to accomplish the required level of protection. For Part III, the Department of Ecology would not mandate a speci-

fied approach, but only the requisite result. Part IV adds additional specificity and guidance for meetings the broad goals of the guidelines. This way a local jurisdiction can, to the extent they desire, creatively and individually craft a program to meet the state's goals. This could be a local program to protect critical habitat areas by requiring conservation easements in developing areas, or by instituting programs to assist in large woody debris recruitment in salmon bearing streams. Allowing opportunity for creative planning on the local level could be an effective method to meet state goals for salmon recovery.

5 • Habitat-scale Existing Conditions and Impacts under WAC 173-16

Introduction and Overview

This chapter on habitat-scale existing conditions addresses the landscapes which come under the Shoreline Management Act — an act which was adopted in 1971, and for which substantive implementation had begun by the mid 1970s when most local governments had adopted shoreline master programs under the existing WAC 173-16. Therefore, this chapter is also a description of the environmental impacts and trends resulting from the application of WAC 173-16.

This chapter is organized around the fundamental landscape features which come under the Shoreline Management Act: marine systems and habitats, stream and river systems and habitats, lakes and lakeshores, and wetlands.

The existing conditions descriptions provided in this chapter address basic, landscape scale characteristics from a state-wide perspective; where necessary, additional, more specific characterizations are provided in the comparative impact analyses in Chapter 6. Some existing conditions descriptions also address recent trends in adverse effects of land uses and practices.

Readers are cautioned to remember that the broad characterizations and trends presented here will, of course, show some variation in different landscapes and land uses across the state. Environmental degradation trends will proceed at different rates depending on the predominate land use, the intensity of land use, and the pace of development. Some addition information on the characteristics of particular land uses can be found in Chapter 6 in the section on Shoreline uses. In some discrete areas environmental improvements might be found. In general, however, the broad themes presented here are accurate on a state-wide basis.

Marine Shorelines

Washington State has three distinct "coasts" — the shores of the inland marine waters of Puget Sound and the Strait of Juan de Fuca (2,246 mi); the Pacific Ocean coast itself (171 mi); and the shores of the estuaries fronting the Pacific Ocean (313 mi)[8]. Several aspects of the state's coasts are considered here; other very specific information is provided in Chapter 6.

[8] Readers familiar with descriptions of Washington's coast may be aware of other marine shoreline length documentations; here we use the lengths defined by Hagen (1958).

Inland Marine Waters

The coast of Puget Sound includes the most intensively developed marine shorelines in the region, in particular the rapidly growing Tacoma – Seattle – Everett metropolitan complex, where high density urban and port facility development is centered on major river deltas and their bays. Outlying suburban shorelines have long been popular for second homes and residences; a growing phenomenon is the expensive bluff-top or beach-front trophy home. Remnants of agricultural lands and timber-growing tracts can still be found in rural areas.

Puget Sound shorelines are predominately narrow beaches, fully or mostly inundated at high tides, and backed by steep banks or bluffs. Most coastal bluffs are unstable or marginally stable; landsliding is common during wet winters when heavy rainfall saturates the soil and upper geologic layers (Gerstel, et al., 1997; Baum et al., 1998). Sand spits are few and mostly small. Rocky shores are common only in the San Juan Islands or north Puget Sound. Substantial portions of the central and south Puget Sound shoreline have been armored in urban areas, at shoreline railroad fills, and for shoreline residential development.

Storm and wave energy regimes are tempered by Puget Sound's inland location, with most storms coming out of the south. When, rarely, a northerly storm occurs at high tide the damage to structures built close to the shore can be substantial.

Ocean Coast

The Pacific Ocean coast, by contrast, has relatively lower intensity development. There is no major urban center. Significant portions of the coast are public parks or other reservations, or within the bounds of Indian reservations. Development (mostly low density residential) occurs only in limited areas along this coast.

Washington's north Pacific coast is characterized by steep, rocky bluffs and headlands, punctuated by a few small pocket beaches, with land ownership predominately within the Olympic National Park and five Indian reservations.

Washington's south Pacific coast is characterized by broad, sandy beaches and sandspits acting, in effect, as "barrier islands" at the mouths of Willapa Bay and Grays Harbor. Land ownership is mostly in small residential parcels and lots. For most of the 20th century the southwest coast beaches have been accretional (Phipps & Smith, 1978) but beginning in the 1980s the rate of accretion began to slow (Phipps, 1990).

The ocean coast is open to the full force of storm-driven waves. During El Niño winters the sea level can temporarily be a foot or more above normal, accompanied by an increased frequency of storm waves, potentially causing temporary but unusually severe erosion (Kaminsky, Ruggiero & Gelfenbaum, 1998).

Ocean Estuaries

The shallow coastal estuaries (Grays Harbor, Willapa Bay, and the Columbia River Estuary) and their shorelines are characterized by relatively small cities and towns, mostly at the river mouths, still-extensive farm-lands and dairy-lands, and shellfish aquaculture.

Most shorelines are in private ownership with the exception of Willapa Bay where portions lie within the Willapa National Wildlife Refuge.

For the most part these bays lie within a broad coastal plain, therefore the shorelines are backed by tidal wetlands, freshwater wetlands, and other low-lying lands. Bluff-backed shorelines are rare. Coastal flooding is an occasional problem for some of the cities and towns, especially those situated on the mouth of a major river.

Storm and wave energy regimes are tempered by the relatively short fetches across the bays. Shoreline accretion and erosion patterns are poorly studied; shoreline erosion is know to occur on the North Bay of Grays Harbor, and near the mouth of Willapa Bay.

Stream and River Shorelines

Stream and river shorelines, or riparian areas[9], cover an intricate network of corridors throughout the state. While there are profound differences in native riparian vegetation species, diversity, and density, as well as the degree of modification throughout the state, with particular differences caused by the climate difference between eastern and western Washington, all riparian habitats share fundamental characteristics.

The following statewide characterization of riparian habitats and streams is quoted from portions of Knutson & Naef (1997), the whole of which is incorporated by reference into this environmental impact statement:

> Riparian ecosystems are considered the most sensitive to environmental change (Naiman et al. 1993) and have the highest vulnerability to alteration (Thomas et al. 1979). These ecosystems are formed and maintained by natural disturbances (e.g., landslides, debris torrents, flooding) which serve to contribute resources (e.g., woody debris, spawning gravel, nutrients) to riparian and in-stream habitat. The same natural disturbance that erodes features in one area may create or revitalize habitat conditions elsewhere. Stable channels and optimal stream habitat conditions occur when some balance exists between the supply of resources and the ability of the channel to store or transport them.
>
> Natural systems evolve and become adapted to a particular rate of natural disturbances over long periods. Land uses alter stream channel processes and disturbance regimes that affect aquatic and riparian habitat (Montgomery and Buffington 1993). Human-induced disturbances are often of greater magnitude and/or frequency compared to natural disturbances. These higher rates may reduce the ability of riparian and stream systems and the fish and wildlife populations to sustain themselves at the same productive level as in areas with natural rates of disturbance.

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[9] There are many definitions of "riparian" — for the purposes of this environmental analysis riparian areas are considered to be aquatic systems with flowing water (e.g., rivers, perennial or intermittent streams, seeps, springs) and the adjacent areas that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. Riparian habitat includes the area beginning at the ordinary high water line and extends to that portion of the terrestrial landscape that directly influences the aquatic ecosystem by providing shade, fine or large woody material, nutrients, organic and inorganic debris, terrestrial insects, or habitat for riparian-associated wildlife. It includes the entire extent of the floodplain because that area significantly influences and is influenced by the stream system during flood events. The riparian habitat area encompasses the entire extent of vegetation adapted to wet conditions as well as adjacent upland plant communities that directly influence the stream system. (Adapted from Knutson & Naef (1997).

Other characteristics also make riparian habitats vulnerable to degradation by human-induced disturbances. Their small size, topographic location, and linear shape make them prone to disturbances when adjacent uplands are altered. The unique microclimate of riparian and associated aquatic areas supports some vegetation, fish, and wildlife that have relatively narrow environmental tolerances. This microclimate is easily affected by vegetation removal within or adjacent to the riparian area, thereby changing the habitat suitability for sensitive species (Thomas et al. 1979, O'Connell et al. 1993).

Because riparian habitat more strongly influences the structure and function of small streams compared to large streams, small streams are more prone to pronounced impacts from the removal of riparian habitat than are large streams and rivers. Land uses that affect water quantity and quality (e.g., dams, agriculture, urban areas), are more likely to affect large streams and rivers because their habitat quality is largely controlled by the input of water from upstream and upland areas (Sullivan et al. 1987, Bilby 1988). When water quantity is reduced in large streams, riparian habitat is likely to be negatively impacted.

Because of its high primary productivity, riparian habitat often responds well to restoration efforts (Kinch 1989). In many cases, ceasing or modifying human activities that negatively impact riparian habitat, coupled with restoration efforts, can bring about relatively rapid and dramatic recovery of lost ecosystem function (Hair et al. 1978, Kinch 1989, Clary and Medin 1990). However, the invasion of exotic plant species may delay or even preclude re-establishment of the original plant community.

Major land uses that impact riparian areas are grouped into seven categories for discussion: forest practices, roads, agriculture, grazing, urbanization, dams, and recreation.

Forest Practices

Forest practices, including timber harvest and its associated activities (e.g., road building, precommercial thinning, controlled burning, herbicide and insecticide spraying), temporarily or permanently alter the character of forested landscapes, including riparian habitat. Because riparian areas topographically occur below uplands, they receive water, soil, and organic debris from upland areas. Forest practices in uplands and in riparian areas are often responsible for delivery of these resources to streams at rates significantly different than natural rates, resulting in changes to structural and functional elements of riparian areas.

Moring et al. (1994) summarized four studies that examined the effects of logging on fish habitat. They reported that bank stability was reduced and solar radiation to the stream increased in areas without intact buffer strips of riparian vegetation. Water temperatures rose above 30°C, dissolved oxygen reached critically low levels, sediment loads increased significantly, and particulate organic matter increased tenfold. They also reported population declines of reticulate sculpins, cutthroat trout, and other salmonids.

Vegetation removal, road construction, and soil disturbance are the chief mechanisms by which forest practices influence riparian areas. These disturbances result in:

- hydrologic (relating to water flow) effects;
- soil destabilization, erosion, and sedimentation;
- stream temperature increases and a more severe microclimate;
- loss of large woody debris;
- fish and wildlife effects;
- cumulative effects.

Roads

Whether constructed as a part of forest practices, agriculture, recreation, or urbanization, roads may have significant and long-lasting impacts on riparian and instream habitat and their fish and wildlife populations (Larse 1970, Thomas et al. 1979, Oakley et al. 1985, Furniss et al. 1991, Hicks et al. 1991b, Noss and Cooperrider 1994). Roads of all types and locations (not including foot trails) affect riparian or stream systems by changing the drainage of a watershed, removing riparian habitat, or by causing mass soil movement, erosion, and subsequent sedimentation into streams. The degree of these effects is related to the road location, construction and maintenance techniques, and to the manner in which roads cross streams. Roads more directly affect fish and wildlife populations by removing riparian habitat, altering instream habitat, introducing human disturbance to riparian and stream areas, acting as a barrier to movement, and causing vehicle-related mortality of wildlife. To prevent or reduce impacts, road planning and route selection by an interdisciplinary team is perhaps the most important single element of road development (Larse 1970).

Although we know that the total length and density of roads have increased in expanding urban areas of Washington, no specific information on the rate of increase and on the overall road mileage, density, or distribution is available (L. Fenstermaker, pers. comm.). On National Forest land in Oregon and Washington, road mileage has risen from 33,850-36,900 km (22,000-24,000 mi) in 1962 to over 138,460 km (90,000 mi) in 1990 (Reeves and Sedell 1992). It has been estimated that about 3,000 miles of new roads are constructed annually on forest lands in the western forested area of the United States (Larse 1970). Many of these newly created forest roads are built without adequate consideration of riparian and fish habitat (Reeves and Sedell 1992). As the density of roads increases, road impacts on riparian and stream systems will inevitably worsen. Roads may have unavoidable effects on streams, no matter how well they are located, designed, or maintained (U.S. For. Serv. et al. 1993).

Agriculture

Beyond the obvious loss of riparian habitat as a result of direct conversion to agricultural land, the effects of agricultural operations on riparian areas generally consist of an excessive supply of non-point source pollution. Because riparian and aquatic systems are the eventual recipients of sediments, fertilizers, pesticides, and wastes, agricultural activities influence the function of stream and riparian ecosystems.

Grazing

Overgrazing is one of the most destructive forces in riparian ecosystems (Davis 1982) and is usually the result of inappropriate livestock management (Behnke and Raleigh 1978, Oregon-Washington Interagency Wildlife Council 1979, Platts 1979). Grazing can affect all characteristics of riparian and associated aquatic systems, including vegetative cover, soil stability, bank and channel structure, instream structure, and water quantity and quality. Overgrazing is considered one of the principal factors contributing to the decline of native salmonids in the Pacific Northwest (Behnke and Zarn 1976, Armour et al. 1991).

While the general condition of rangelands in the United States has improved over the last century (Box 1979, Busby 1979), grazed riparian areas are in worse condition. The U.S. Bureau of Land Management estimated that of 217,254 ha (536,835 ac) of riparian habitat, 181,086 ha (447,464 ac) (83%) were in unsatisfactory condition (Almand and Krohn 1979). Riparian areas that have been and continue to be subject to overgrazing are primarily those in the semi-arid and arid regions (Behnke and Raleigh 1978).

Urbanization

People have traditionally settled in riverine floodplains and along the banks of major streams and lakes (Goldstein et al. 1983, Nabhan 1985). Modern urban settlement near water and throughout watersheds usually entails large-scale removal of native vegetation and its replacement with buildings, pavement, roads, and manicured plantings, all consisting primarily of impervious surfaces. Unlike the effects of forestry, the loss of natural vegetation and consequences to riparian

and stream habitats in urbanized areas are usually permanent (Booth 1991). The effects of urban and industrial developments generally result in:

- changes in basin hydrology;
- loss of riparian habitat;
- loss of woody debris and other instream structures;
- degradation of stream channels;
- reduction in water quality;
- habitat fragmentation;
- introduction of pets and exotic pests.

The loss of natural vegetation in riparian and upland areas and its replacement with compacted or largely impervious surfaces changes the hydrology of urbanized watersheds. These changes usually result in a loss of fish and wildlife habitat. Overall, hydrologic changes upset the balance of aggradation and degradation processes that are essential in maintaining healthy stream and riparian ecosystems. The most dramatic and well-studied effect is the increase in the maximum discharge associated with floods and storm events; peak flows in urbanized watersheds have been known to increase as much as five-fold over natural conditions (Booth 1991).

In an attempt to be close to the water and to "clean up" areas by replacing them with manicured landscapes, riparian vegetation is often cleared when land is developed. Because riparian habitat supports the greatest number of species compared to other habitats, its protection can provide a significant benefit to fish and wildlife in developed landscapes (Noss 1993).

The loss of riparian vegetation due to urbanization: 1) degrades stream conditions through increased erosion of banks that are no longer armored with roots and debris from natural vegetation, 2) removes a source of logs and organic debris that stabilize streams and provide a source of food and nutrients, 3) increases stream temperatures through shade removal, and 4) reduces the capacity of the riparian area to filter incoming sediments and pollutants (Klein 1979).

Woody debris, especially large logs, are lost in urbanized areas through the removal of their source — riparian vegetation. Logs are flushed through the systems during high peak flows, and they are lost through deliberate removal. Historically, logs were removed in large rivers to improve navigation associated with urban development (Sedell and Luchessa 1982). After the removal of riparian vegetation, remnant logs eventually degrade or are swept downstream during the frequently occurring flooding events in urban areas (Booth 1991). Large woody debris that is removed is rarely replaced in urban areas.

Fish-bearing rivers and streams that flow through heavily-developed areas rarely resemble their natural form. Stream beds are replaced with drainpipes and culverts, riparian vegetation is removed, and municipal wastes contribute pollutants, sediments, and excessive nutrients to the water. To accommodate the real estate needs and safety of expanding urban populations, streams and rivers are frequently channelized, diked, or piped underground. For example, 73% of Ravenna Creek in King County now runs through a pipe (Wash. Dept. Ecol. 1981). Loss of riparian vegetation, increased flooding, and stream channel manipulation eliminate large woody debris, pools and riffles, sinuosity, slow flowing side channels, and other essential structural components of fish habitat in urbanized areas. Destruction or severe degradation of fish and wildlife habitat by urbanization is often complete and irreparable (Canning and Stevens 1989).

Streams and rivers flowing through urban landscapes suffer reductions in water quality that impair their ability to support microorganisms, fish, and wildlife. Water quality is reduced through increased sedimentation, chemical pollution, and increases in water temperature. Higher than normal surface flows carry pollution, nutrients, and sediment to streams in large quantities. Surface flows also deliver warmer water to streams than do subsurface flows. Urban stormwater run-

off is commonly borne in storm sewers or surface channels and deposited directly into the waterway, with little opportunity to be absorbed, cooled, and cleansed by passing through natural vegetation and soils (King County Planning Division 1980).

One of the greatest impacts of urbanization on wildlife comes from habitat fragmentation (Stenberg et al. 1997). Remaining natural habitat in urban areas typically consists of small, infrequently encountered remnant patches that are isolated from each other (Carleton and Taylor 1983, Goldstein et al. 1983). Wildlife in such settings is limited to highly-adaptive and mobile species with small area or generalized habitat requirements; examples include the American robin, European starling, house sparrow, raccoon, and coyote (Aldrich and Coffin 1980, Quinn 1992). Animals that require large areas of intact natural vegetation, such as some forest interior songbirds and elk, are lost during habitat fragmentation associated with urbanization (Aldrich and Coffin 1980, Bryant and Maser 1982).

May, et al. (1997) characterize the lowland stream corridors of the Puget Sound basin as follows based on a study of a group of 22 streams in Snohomish King, Pierce, and Kitsap counties as follows:

The Puget Sound lowland (PSL) ecoregion contains an abundance of complex and historically productive salmonid habitat in the form of small streams as well as their riparian forests and wetlands. These watersheds are under intense pressure due primarily to the cumulative effects of urban development. Instream habitat characteristics, riparian conditions, physio-chemical water-quality, and biological attributes of 22 PSL streams (120 survey reaches). were studied over a gradient of development levels to determine relationships between urbanization and stream quality and suggest target conditions for management/protection. Urbanization of PSL watersheds has resulted in an increase in the fraction of total impervious area (% TIA) and a decrease in forested area, including a significant loss of natural riparian forests and wetlands. The cumulative effects of a modified hydrologic (disturbance) regime, the loss of instream structural complexity, and the alteration of channel morphological characteristics accompanying urbanization have resulted in substantial degradation of instream habitat during the initial phases of the development process. As the level of basin development increased above 5% total impervious area (% TIA), results indicated a precipitous initial decline in biological integrity as well as the physical habitat conditions (quantity and quality) necessary to support natural biological diversity and complexity. The frequency, volume, and quality of large woody debris (LWD) decreased significantly as basin development and riparian encroachment increased. Loss of LWD due to washout and removal, as well as a reduction in LWD recruitment due to loss of mature riparian forest areas, were significant factors. As a result of the reduction in the quantity and quality of LWD, along with the effects of a modified hydrologic regime, Coho rearing habitat was significantly reduced. Salmonid spawning habitat was also degraded by the cumulative effects of urbanization. Fine sediment in spawning gravels generally increased as urbanization increased, while intragravel dissolved oxygen (IGDO) also decreased during the period of salmonid embryo development. Chemical constituents (primarily metals) of water quality during baseflow conditions, as well as storm events, were insufficient to have produced adverse effects in streams with low to moderate % TIA, but increased markedly in highly urbanized basins (TIA>45%).

Results suggest that resource management should place a high priority on preservation and protection of high quality stream ecosystems (TIA <5%) that currently support natural salmonid populations (Coho and cutthroat). Mature, riparian forests dominated by coniferous trees should be the long-term management goal. A wide (>30 m) and near-continuous (<2 breaks/km) riparian zone appears to be a necessary, although not a wholly sufficient condition for a natural level of stream quality and biotic integrity. Restoring the natural hydrologic regime should be a primary goal for rehabilitation and enhancement efforts. A set of stream quality indices and instream habitat target conditions are proposed for monitoring and managing PSL streams.

Lakes

There are somewhat more than 7,800 lakes[10] in Washington State (Wolcott, 1973a, 1973b). Less than ten percent of these lakes come under the Shoreline Management Act. When first adopted by the legislature in 1971, the SMA mandated shoreline management of all lakes twenty acres and greater in surface area. In developing the rule defining and listing the lakes of Washington which come under the SMA (Chapter 173-20 WAC), the Department of Ecology made a decision to exclude from regulatory listing all lakes on federal reservations (military reservations, Indian reservations, national parks, and national forests). Also, lakes 20 acres and greater in area and lying on a 100-year flood plain were not listed (e.g. the Columbia River floodplain in Clark County) because they are encompassed by the SMA by virtue of their being a part of the 100-year flood plain. WAC 173-20 lists 758 lakes.

Bortleson, Dion & McConnell (1974) provide the best landscape-scale, state-wide characterization of the lakes of Washington, the whole of which is incorporated by reference into this environmental impact statement:

> Lakes in Washington occur under a great variety of geologic conditions. In the Puget Sound Lowlands of western Washington most lakes occupy depressions in the surface of glacial drift — the sand, gravel, slit, clay, and till laid down by the Puget lobe of continental glaciers during the ice age. These depressions are either elongate troughs cut by the passing of ice sheet or are more circular-shaped kettle lakes formed by the melting of stagnant ice blocks.
>
> In the adjacent foothills of the Cascade Range and Olympic Mountains, most lakes occupy depressions eroded in the bedrock by the passing continental glacier, while lakes in the higher mountains are in basins cut by local alpine glaciers.
>
> In eastern Washington, lakes in the mountainous northern part — Okanogan Highlands — and on the eastern slope of the Cascade Range generally occur in glacier-cut depressions in bedrock. In the semiarid Columbia Plateau, underlain by basalt bedrock, most lakes occupy the more deeply cut parts of some coulees of the channeled scablands.
>
> Many lakes have been formed, or increased in size, by man's activities. Numerous reservoirs are located in valleys of the Cascade Range and Olympic Mountains, dammed for a variety of purposes that include municipal water supply, irrigation, electrical power generation, flood control, and recreation. In the Columbia Basin Irrigation Project area of eastern Washington a number of small lakes have been formed in low areas by seepage and waste water from the irrigation project.

Lakeshore land use in urban areas, for the most part, has come to be dominated by high density single family residential development accompanied by shoreline modification (landscaping, shoreline bulkheads, and private docks) which has substantially altered the character of the shoreline. Lakes an hour or two commute-distance from urban areas are also increasingly dominated by lower density residential and recreational single family development accompanied by shoreline modification.

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[10] A lake, as defined by Wolcott for his inventory, has a minimum surface area of one acre.

Wetlands

This section is quoted from *Washington Wetland Resources* (Lane & Taylor, 1996) , the whole of which is incorporated by reference into this environmental impact statement. The original version may also be viewed on-line, including illustrations and maps, at http://wwwdwatcm.wr.usgs.gov/reports/wetlands/.

Washington's Wetland Resources

Washington's wetlands are remarkably diverse, each having a unique combination of ecological characteristics such as altitude, seasonality, chemistry, and species composition. Although wetlands cover only about 2 percent of the State, they are a valuable and important resource.

Wetlands perform many important hydrologic functions, such as maintaining streamflows, slowing and storing floodwaters, stabilizing streambanks, and reducing the erosion of shorelines. Although usually thought of as areas of ground-water discharge, some wetlands serve as areas of ground-water recharge (Washington State Department of Ecology, 1992a). Wetlands also improve water quality by filtering out sediments, excessive nutrients, and toxic chemicals. By serving these and other functions, wetlands can sometimes reduce or eliminate the need for the costly engineering and construction of control, treatment, and retention facilities (Puget Sound Water Quality Authority, 1990).

For a vast and diverse array of wildlife, including invertebrates, fish, amphibians, reptiles, birds, and mammals, wetlands are essential habitats for feeding, nesting, cover, or breeding. More than 315 species of wildlife use the State's wetlands as primary feeding or breeding habitat. Wetlands are vital nursery and feeding areas for anadromous fish such as salmon and steelhead trout (Washington State Department of Wildlife, undated). Wetlands are critical habitats for at least one-third of the State's threatened or endangered species of wildlife (Puget Sound Water Quality Authority, 1990).

Wetlands furnish many opportunities for education and scientific research. The numbers and diversity of plants and animals found in wetlands make these habitats excellent locations for teaching and research in biology, botany, ornithology, environmental science, and ecology.

Washington's wetlands provide many quality-of-life benefits. As scenic areas, wetlands present a visually pleasing contrast to upland areas, open water, and for-

Palustrine: Nontidal and tidal-freshwater wetlands in which vegetation is predominantly trees (forested wetlands); shrubs (scrub-shrub wetlands); persistent or nonpersistent emergent, erect, rooted herbaceous plants (persistent- and nonpersistent-emergent wetlands); or submersed and (or) floating plants (aquatic beds). Also, intermittently to permanently flooded open-water bodies of less than 20 acres in which water is less than 6.6 feet deep.

Lacustrine: Nontidal and tidal-freshwater wetlands within an intermittently to permanently flooded lake or reservoir larger than 20 acres and (or) deeper than 6.6 feet. Vegetation, when present, is predominantly nonpersistent emergent plants (nonpersistent-emergent wetlands), or submersed and (or) floating plants (aquatic beds), or both.

Riverine: Nontidal and tidal-freshwater wetlands within a channel. Vegetation, when present, is same as in the Lacustrine System.

Estuarine: Tidal wetlands in low-wave-energy environments where the salinity of the water is greater than 0.5 part per thousand (ppt) and is variable owing to evaporation and the mixing of sea-water and freshwater.

Marine: Tidal wetlands that are exposed to waves and currents of the open ocean and to water having a salinity greater than 30 ppt.

ests. In addition, the State's wetlands support a wide range of recreational activities, including bird watching, nature appreciation, camping, boating, fishing, and hunting.

Types and Distribution

Wetlands are lands transitional between terrestrial and deep-water habitats where the water table usually is at or near the land surface or the land is covered by shallow water (Cowardin and others, 1979).

According to a 1988 FWS inventory, wetlands cover about 939,000 acres in Washington (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990). That inventory, part of the FWS National Wetlands Inventory, used color-infrared aerial photographs taken from 1980 to 1984 combined with field inventories of selected wetlands. Owing to the limitations of this process, a small percentage of wetlands might not have been included in the acreages.

Palustrine wetlands cover about 709,000 acres, about 75 percent of the total wetland acreage in Washington (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990). These wetlands exist throughout the State in coastal sand dunes; in lowlands adjacent to estuaries, rivers, and lakes; in the backwaters of reservoirs and irrigation wasteways; adjacent to springs or seeps; and in isolated depressions. Extensive tracts of palustrine wetlands cover the sand spits of Grays Harbor and Willapa Bay and the banks of the Columbia, Chehalis, Yakima, and Pend Oreille Rivers (Canning and Stevens, 1989; Washington State Department of Ecology, 1992b).

Palustrine forested wetlands commonly are referred to as swamps or coastal swamps. Their predominant vegetation includes red alder, thin-leafed alder, black cottonwood, western red cedar, Sitka spruce, and hemlock. Palustrine scrub-shrub wetlands commonly are referred to as swamps or bogs. Their predominant vegetation includes willows, red Osier dogwood, Douglas spiraea, snowberry, hawthorn, wild rose, and gooseberry. Palustrine emergent wetlands are also known as freshwater marshes, wet meadows, fens, bogs, prairies, potholes, vernal pools, and playas. Predominant emergent vegetation includes cattail, bulrush, and reed canary grass. Predominant aquatic-bed vegetation includes duckweed, water lilies, and water buttercup (Canning and Stevens, 1989).

Lacustrine wetland acreage in Washington is not addressed in this summary because the acreage has not yet been separated from the acreage for lacustrine deepwater habitat (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990). Lacustrine emergent wetlands and aquatic beds exist in the shallows of lakes throughout Washington. Predominant emergent vegetation includes duckweed, water lilies, water buttercup, arrowhead, water plantain, smartweed, yellow water lily, common mare's tail, and pondweed. Predominant lacustrine aquatic-bed vegetation is the same as noted for palustrine aquatic beds (Canning and Stevens, 1989).

Riverine wetlands cover about 700 acres in Washington (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990) and consist of the areas of river channels that are occasionally to permanently flooded. These areas can be nonvegetated or vegetated by submersed and nonpersistent emergent aquatic plants. Areas of the river channel that typically are exposed commonly are referred to as river bars, gravel bars, or unconsolidated shorelines. They commonly become vegetated by pioneering terrestrial species such as dandelion and fireweed during periods of low flow. Plant species commonly found in the flooded areas of the channel include true watercress, yellowcress, yellow water lily, arrowhead, water plantain, and smartweed (Canning and Stevens, 1989).

Estuarine wetlands cover about 202,000 acres, about 22 percent of the total wetland acreage in Washington (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990). These wetlands are present on the deltas and in the lower reaches of most of the rivers in western Washington (the part of the State west of the crest of the Cascade Range). Broad expanses of estuarine wetlands exist around Grays Harbor and Willapa Bay on the coast, at the mouth of the Columbia River,

and around Skagit and Padilla Bays on Puget Sound (Canning and Stevens, 1989; Washington State Department of Ecology, 1992b).

Marine wetlands cover about 27,000 acres, about 3 percent of the total wetland acreage in Washington (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990) and consist of beaches and rocky shores. The high-energy tidal environment of these wetlands keeps them unvegetated except for algae. Marine wetlands exist along the Pacific coast and the Strait of Juan de Fuca, on some offshore rocky islands, and in the San Juan Islands (Canning and Stevens, 1989).

Trends

Estimates of presettlement wetland acreage in Washington range from 1.17 to 1.53 million acres, depending on the historical information and research assumptions used (Canning and Stevens, 1989; Dahl, 1990; Washington State Department of Ecology, 1992b). Based on a 1988 estimate by the FWS, about 20 to 39 percent of Washington's wetlands, have been lost during the past two centuries. Other estimates place the total loss as great as 50 percent, and some urbanized areas of the Puget Sound area have experienced losses of from 70 to 100 percent. Estimates of continuing wetland loss range from 700 to 2,000 acres per year. In addition, most of the State's remaining wetlands have been significantly degraded (Washington State Department of Ecology, 1992b, d).

The principal historical causes of wetland loss and degradation are the expansion of agriculture and the siting of ports and industrial facilities. The major causes of continuing loss and degradation of wetlands are urban expansion, forestry and agricultural practices, and the invasion of exotic plants and animals (Canning and Stevens, 1989; Washington State Department of Ecology, 1992b, d).

6 • Comparative Impact Analyses

Introduction and Overview

This chapter on comparative impact analyses is organized in accordance with the major sections of the draft rule. These impact analyses compare Alternative A, a continued application of existing WAC 173-16, with the proposed Alternative D (WAC 173-26, Part III and Part IV). Statements here as to the content or meaning of the existing WAC 173-16 or the proposed WAC 173-26 are summarized for the purposes of environmental impact analysis and have no other meaning; the full intent and text of those rules can be obtained only by reading the full text of the rule. The summarizations of portions of WAC 173-26 emphasize the broad policies which form the basis for Part III and how Part IV differs from Part III. (No notation is made regarding Part IV where it is substantially the same as Part III except that Part IV policies include specific reference to maintenance of "properly functioning conditions" (PFC) for "threatened or endangered" (T&E) species.)

The impact analyses are necessarily generalized, as adoption of the proposed rule will only indirectly effect the environment—it will simply require that local governments amend their local Shoreline Master Program in a manner consistent with the amended rule, while also consistent with local circumstances. The exact manner in which the draft rule will affect the environment will be determined largely by the specifics of each of the 39 county and 210 city shoreline master programs:

- local governments with no shoreline affected by an ESA listing will likely choose to plan under Part III;
- some local governments affected by an ESA listing will choose to plan under Part III and seek an ESA consultation with the Federal Services;
- some local governments affected by an ESA listing will choose to plan under Part III and not seek an ESA consultation with the Federal Services; and
- some local governments affected by an ESA listing will choose to plan under Part IV thus likely avoiding the need to seek a special ESA consultation with the Federal Services.

How quickly those local SMPs cause actual effects on-the-ground or in-the-water will be determined by the pace of development and re-development. On a state-wide, landscape scale, substantive effects cannot be expected for decades. Locally, landscape scale effects may be evident sooner.

Table 6.1: Permitted Shoreline Projects by Individual Jurisdiction, 1990 – 2000.

Jurisdiction	Projects	Percent
Seattle	445	6.7
Pierce County	335	5.0
San Juan County	298	4.5
Mason County	255	3.8
Skagit County	250	3.8
King County	225	3.4
Whatcom County	213	3.2
Grays Harbor County	176	2.6
Snohomish County	175	2.6
Pacific County	173	2.6
Island County	169	2.5
Tacoma	163	2.5
Lewis County	149	2.2
Cowlitz County	147	2.2
Chelan County	129	1.9
Clark County	126	1.9
Clallam County	122	1.8
Kitsap County	114	1.7
Mercer Island	99	1.5
Everett	98	1.5
Thurston County	84	1.5
Bellingham	82	1.2
Renton	81	1.2
Jefferson County	78	1.2
Pend Oreille County	77	1.2
Subtotal	4263	64.0
All Others	2214	36.0
Total	6677	100.0

Table Notes:

1. Data derived from queries on the Shorelands Programs' Permit Tracking Database for the period January 1990 through May 2000.

2. No assurance is implied that this information is complete. The database from which it was derived is maintained for the purpose of tracking permit applications, not for assessing development trends.

Table 6.2: Permitted Shoreline Projects by County area, 1990 – 2000.

County	Projects	Percent
King	*1367*	*20.5*
Pierce	*586*	*8.8*
Skagit	*353*	*5.3*
Snohomish	*340*	*5.3*
Whatcom	*333*	*5.1*
San Juan	*322*	*5.0*
Grays Harbor	*270*	*4.0*
Mason	*265*	*4.0*
Pacific	*240*	*3.6*
Clark	*230*	*3.4*
Kitsap	*226*	*3.4*
Clallam	*204*	*3.1*
Cowlitz	*189*	*2.8*
Island	188	2.8
Chelan	183	2.7
Lewis	176	2.6
Thurston	144	2.2
Spokane	123	1.8
Jefferson	97	1.5
Yakima	84	1.3
Grant	82	1.2
Wahkiakum	81	1.2
Okanogan	80	1.2
Pend Oreille	80	1.2
Stevens	71	1.1
Kittitas	62	0.9
Whitman	52	0.8
Douglas	43	0.6
Benton	40	0.6
Walla Walla	29	0.4
Klickitat	27	0.4
Skamania	27	0.4
Asotin	26	0.4
Ferry	14	0.2
Columbia	7	0.1
Franklin	4	0.1
Adams	1	0.0
Garfield	0	0.0
Lincoln	0	0.0
Total	6677	100.0

In a geographical sense, the effects of the proposed rule amendment can be expected to be most prominent and most quickly realized in western Washington if past trends continue into the future. A review of the shoreline permit activity state-wide since 1990 indicates that 64% of the permitted shoreline development projects occurs in 25 of the 249 local jurisdictions which implement the SMA (see Table 6.1). Another way of looking at this is to summarize the permitted projects not by individual jurisdiction but by geographic areas (counties) (Table 6.2): approximately 70% of the permitted shoreline development projects occur in 1/3 of the counties (italicized in Table 6.2).

It is important to remember that much shoreline development is exempted from a requirement to acquire a shoreline permit, most notably single-family residential development. These data do not, therefore, include residential development. It is also important to remember that the data in the tables do not distinguish between the magnitude of the permitted projects. Still, the broad patterns identified above are likely to be representative of on-the-ground conditions

This Draft EIS can only anticipate what might be the secondary and cumulative effects of state-wide implementation by local governments.

An integrated analysis of these segmented analyses is provided in Chapter 7.

This impact statement cannot and does not attempt to distinguish between all the possibilities as to how local governments might choose to approach SMP amendment regarding choices between Part III and Part IV. As noted above, local governments not affected by an ESA listing will likely choose to develop their amended SMP under Part III. Local governments affected by an ESA listing might choose to develop their amended SMP under Part IV to gain greater likelihood of acceptance of their SMP by the Federal Services, or they might choose to develop their amended SMP under Part III and negotiate their own agreement with the Federal Services, or they might choose to develop their amended SMP under Part III and not explicitly address ESA issues. This impact analysis simply assesses likely environmental effects at the state-wide landscape scale based on the broad policies which form the basis for both Part III and Part IV.

Finally, the writing style in this chapter is ‘telegraphic’ — that is, to avoid the constant repetition of phrases like “…the proposed rule…” such phrases have been eliminated to a large degree where ever the context is unambiguous.

Where provisions of WAC 173-26 are quoted, they are taken from Part III to characterize the broad intents of a particular section. Where Part IV adds a layer of specificity to the base provisions of Part III, those differences in wording are summarily noted.

Environment Designations (WAC 173-26-210)

The shoreline environment designations established under the Shoreline Management Act are one of the principal tools available for applying and tailoring the general guidelines of the Act to local shorelines. Not only does classifying shorelines into specific designations as recommended in WAC 173-16-040(4) provide the means of adapting broad policies to shoreline segments with distinctively different conditions and resources, it is also a way to integrate comprehensive shoreline planning into master program regulations.

Existing WAC 173-16

The existing rule identifies four primary shoreline environments:

> (i) Natural environment. The natural environment is intended to preserve and restore those natural resource systems existing relatively free of human influence. Local policies to achieve this objective should aim to regulate all potential developments degrading or changing the natural characteristics which make these areas unique and valuable.
>
> (ii) Conservancy environment. The objective in designating a conservancy environment is to protect, conserve and manage existing natural resources and valuable historic and cultural areas in order to ensure a continuous flow of recreational benefits to the public and to achieve sustained resource utilization.
>
> (iii) Rural environment. The rural environment is intended to protect agricultural land from urban expansion, restrict intensive development along undeveloped shorelines, function as a buffer between urban areas, and maintain open spaces and opportunities for recreational uses compatible with agricultural activities.
>
> (iv) Urban environment. The objective of the urban environment is to ensure optimum utilization of shorelines within urbanized areas by providing for intensive public use and by managing development so that it enhances and maintains shorelines for a multiplicity of urban uses.

In addition, a local government may elect to establish additional environment designations as warranted, and many have done so. Typical alternative designations include an "urban-maritime" designation for shorelines where only water-dependent uses are regularly permitted; a "suburban" designation applying to shorelines that are not strictly urban, but are more intensively developed than a rural setting; and an "aquatic" designation to include all water areas and submerged lands.

Proposed WAC 173-26

> The recommended classification system consists of six basic environments: "High-intensity," "shoreline residential," "urban conservancy," "rural conservancy," "natural," and "aquatic."

The basic environments are defined as follows:

> The purpose of the "natural" environment is to protect and restore those shoreline areas that are relatively free of human influence or that include intact or minimally degraded shoreline functions intolerant of human use. These systems require restrictions on the intensities and types of uses permitted to maintain the ecological functions and ecosystem-wide processes.
>
> The purpose of the "rural conservancy" environment is to protect, conserve, and restore ecological functions, existing natural resources, and valuable historic and cultural areas in order to achieve ecological protection, sustain resource use, achieve natural flood plain processes, and provide recreational opportunities. Examples of uses that are appropriate in a "rural conservancy" environment include low-impact outdoor recreation uses, timber harvesting on a sustained-yield basis, agricultural uses, aquaculture, low-intensity residential development consistent with the local comprehensive plan's rural element and chapter 36.70A RCW, and other related low-intensity uses.
>
> The purpose of the "aquatic" environment is to protect, restore, and manage the unique characteristics and resources of the areas waterward of the ordinary high-water mark.
>
> The purpose of the "high-intensity" environment is to provide for high-intensity water-oriented commercial , transportation, and industrial uses while protecting existing ecological functions and restoring ecological functions in areas that have been previously degraded.

> The purpose of the "urban conservancy" environment is to protect and restore ecological functions in urban and developed settings while allowing a variety of water-oriented uses.
>
> The purpose of the "shoreline residential" environment is to accommodate residential development and appurtenant structures that are consistent with this chapter. An additional purpose is to provide appropriate public access and recreational uses.

In addition,

> Local governments may establish different subdesignations provided they are consistent with this chapter. For example, a local government wishing to differentiate between "conservancy" shorelines used for park purposes and those for habitat restoration might establish "conservancy-park" and "conservancy-habitat" designations, each with separate purposes, criteria, policies, and use provisions. Or, a local government may wish to set site-specific standards for pier and dock construction in more sensitive aquatic areas and restrict aquaculture in harbor areas by establishing "aquatic-conservancy" and "aquatic-harbor" environments, each with different allowable uses and development standards.

Also,

> Local governments may use "parallel environments" where appropriate. Parallel environments divide shorelands into different sections generally running parallel to the shoreline or along a physical feature such as a bluff or railroad right of way. Such environments may be useful, for example, to accommodate both resource protection near the shoreline and development opportunities further from the shoreline.

Existing Conditions & Impacts Under WAC 173-16

The existing environment designation provisions of WAC 173-16 provide local governments with a measure of flexibility nearly as great as that provided by the proposed WAC 173-26, but this flexibility is not as explicitly presented in the existing rule. Examples of how this flexibility might be implemented were not presented in an organized way until 1990 when the first edition of the *Shoreline Management Guidebook* was published. As a result, for the most part, shoreline designations throughout the state tend to be limited to four basic environments: natural, conservancy, rural, and urban.

Potential Environmental Impacts Under WAC 173-26

The proposed environment designation provisions of WAC 173-26 provide local government with more guidance in establishing alternative shoreline environment designations, and in establishing consistency between their local shoreline master program and their comprehensive plans. Nothing in the existing rule prevents local governments from the use of alternative or parallel environment designations, and many have. Some key differences between the existing rule and the proposed rule are that under the proposed rule local master programs (1) must state the criteria for classifying or reclassifying shorelines with an environment designation, (2) that "local governments shall assign shoreline designations (environments) consistent with the criteria" specified in WAC 173-26, and (3) the management policies associated with the environment designations are more specific than under WAC 173-16. The anticipated net result is that, to a greater degree than at present, shorelines designations will more closely resemble existing landscape and land use characteristics.

General Provisions (WAC 173-26-220)

Archaeological and Historic Resources (220 (1))

Existing WAC 173-16

Provides at section 060 (2) that in preparing SMPs local governments should identify areas of potential archaeological or cultural value and establish procedures for salvaging the data, and that shoreline permits should contain provisions requiring notification of archaeological or cultural discoveries.

Proposed WAC 173-26

Requires that in preparing SMPs local governments shall provide for the protection of archaeological, historical, and cultural features. Shoreline permits shall require site inspections or evaluations in areas of known cultural resources, and shall require notification and work-stoppage if cultural artifacts are found.

Existing Conditions & Impacts Under WAC 173-16

Shorelines are generally acknowledged to harbor a disproportionate density of cultural resources due to the proximity of water and fisheries resources. No studies are known to have been published which assess the loss of cultural resources in shorelines due to development.

Potential Environmental Impacts Under WAC 173-26

The proposed rule essentially reiterates the intents of RCW 27.44 (Indian Graves and Records) and RCW 27.53 (Archaeological Sites and Resources) and their implementing rules which are already applicable to development in shorelines. No measurably different degree of protection of cultural resources is likely to occur.

Wetlands (220 (2) (c) (i))

Existing WAC 173-16

WAC 173-16 contains no section which explicitly regulates wetlands, however, section 050 (6) describes "some of the features of…[marshes, bogs, and swamps]…which are susceptible to damage…and to provide a basis for the guidelines pertaining to human-use activities…"

Proposed WAC 173-26

Requires that a SMP shall provide for no net loss of wetlands with respect to: certain forms of construction actions; vegetation removal; filling; or other actions which would result in a significant change of physical, chemical, or biological characteristics of wetlands. Master programs will be required to adhere to specific standards regarding: wet-

lands use regulations; wetland ratings or characterizations; alteration; buffers; mitigation; and compensatory mitigation.[11]

Existing Conditions & Impacts Under WAC 173-16

See Chapter 5 for a summary of the status and trends of wetlands state-wide. Currently wetlands are regulated under a variety of means and programs. However, none of these laws addresses wetlands in a comprehensive fashion. For example, the federal Clean Water Act (implemented primarily through the US Army Corps of Engineers' "Section 404" permit program) only regulates the placement of fill in wetlands. The state Growth Management Act requires that cities and counties "designate and protect" wetlands through "Critical Areas Ordinances" but provides no specific standards of protection. Some local governments have adopted local wetlands ordinances. In 1990 Ecology issued a model wetlands ordinance[12], use of which is voluntary. Thus, the level of protection afforded to wetlands in Washington is highly variable across the state.

Potential Environmental Impacts Under WAC 173-26

The proposed rule will bring greater consistency to the management of wetlands under the SMA. All local governments will have to address the same specific types of wetlands, and will have to address the same set of issues in developing their master program. The proposed rule provides state-wide policy guidance, while allowing local governments flexibility to develop regulations appropriate to the local landscape features. The rate of wetlands loss and degradation is expected to be reduced.

Geologically Hazardous Areas (220 (2)(c) (ii))

Existing WAC 173-16

WAC 173-16 contains no section which explicitly addresses geologically hazardous areas.

Proposed WAC 173-26

Requires that local governments [1] restrict new development in geologically hazardous areas as defined by WAC 365-190-080(4) under the Growth Management Act, [2] to prohibit new development that would pose a hazard during its useful life, and [3] prohibit new development which would require shoreline stabilization (with certain exceptions). The geologically hazardous areas of concern include unstable bluffs, river channel migration zones, and landslide areas.

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[11] Part IV is substantially the same as Part III with an additional requirement that wetland buffers be managed in a "natural condition."

[12] The Model Wetlands Ordinance is still available for use, but portions are now considered in need of up-dating.

Existing Conditions & Impacts Under WAC 173-16

Unstable slopes are common along Puget Sound shorelines (WDOE, 1977, 1978a, 1978b, 1978c, 1978d, 1979a, 1979b, 1979c, 1979d, 1979e, 1980a, 1980b) and steep slopes in general. Landsliding can be a hazard state-wide, but is especially dangerous in western Washington where heavy winter rains saturate soil layers, fostering landsliding (Gerstel, 1997).

The Growth Management Act requires that cities and counties "designate and protect" geologically hazardous areas through "Critical Areas Ordinances" but provides no specific standards of protection.

Potential Environmental Impacts Under WAC 173-26

For geologically hazardous areas which also fall under the Shoreline Management Act, establishes explicit standards which are lacking in WAC 365-190-080(4) under the Growth Management Act. To the extent that new development on unstable slopes and other geologically hazardous areas is restricted or provided with mitigating design, this should result in lower rates of damage to structures and risk people than occurs at present, and lower rates of delivery of excessive sediment loads to streams.

Additionally, development on shoreline geologically hazardous areas often leads to attempts to stabilize the base of the slope at the shoreline through the use of hard structures. As discussed elsewhere in "Shoreline Modification Activities" such structural stabilization has an adverse environmental effect on shoreline processes and habitats. To the extent that new development on shoreline geologically hazardous areas is restricted, the impetus for shoreline stabilization will be reduced, thus effecting a net benefit to aquatic species.

Critical Salt Water Habitats (220 (2) (c) (iii))

Existing WAC 173-16

WAC 173-16 contains no section which explicitly regulates critical saltwater habitats, however, section 050 (5) describes "some of the features of…[estuaries]…which are susceptible to damage…and to provide a basis for the guidelines pertaining to human-use activities…"

Proposed WAC 173-26

Part III defines critical saltwater habitats as:

> Critical saltwater habitats include all kelp beds, eelgrass beds, spawning and holding areas for forage fish, such as herring, smelt and sandlance, commercial and recreational shellfish beds, mudflats, intertidal habitats with vascular plants, and areas with which priority species have a primary association. Critical saltwater habitats require a higher level of protection due to the important ecological functions they provide. Ecological functions of marine shorelands can affect the viability of critical saltwater habitats. Therefore, effective protection and restoration of critical saltwater habitats should integrate management of shorelands as well as submerged areas.

Requires that SMPs address the following, where applicable: protecting and restoring a system of fish and wildlife habitats with connections between larger habitat blocks and

open spaces; protecting riparian and estuarine ecosystems; establishing buffer zones around these areas to separate incompatible uses from the habitat areas; restoring lost salmonid habitat; improving water quality; and protecting fresh water and sediment inflow regimens.

Part III also requires that:[13]

> All public and private tidelands or bedlands suitable for shellfish harvest shall be classified as critical areas. Local governments should consider both commercial and recreational shellfish areas. Local governments should review the Washington department of health classification of commercial and recreational shellfish growing areas to determine the existing condition of these areas. Further consideration should be given to the vulnerability of these areas to contamination or potential for recovery. Shellfish protection districts established pursuant to chapter 90.72 RCW shall be included in the classification of critical shellfish areas.

Also provides that docks, bulkheads, bridges, fill, floats, jetties, and other human-made structures shall not intrude into or over critical saltwater habitats except for a water-dependent use or ecological restoration.

Existing Conditions & Impacts Under WAC 173-16

Inventory and assessment of critical saltwater habitats is patchy and often dated; only commercial shellfish beds are regularly inventoried and assessed. The general health of Washington's shellfish beds continues to decline, as summarized by the Washington Department of Natural Resources (1998), the whole of which is incorporated by reference into this environmental impact statement:

> Shellfish beds serve as a good indicator of the health of the marine environment. Water pollution, poor land use and development of shoreline areas affect these beds. Crabs, shrimp, oysters, clams and other sea creatures rely on marine sediments for food, shelter and nurseries and are susceptible to pollutants that accumulate in these sediments. Shellfish living in polluted sediments tend to accumulate bacteria and toxins in their tissue, making them unfit for human consumption.
>
> Many people rely on healthy populations of shellfish for commercial and recreational uses. The more than 350 commercial shellfish operations in Washington harvest a variety of species, including oysters, clams, mussels and scallops. In 1996, the shellfish industry generated about $740 million and employed 4,300 people.
>
> The Washington State Department of Health classifies more than 200,000 acres of commercial shellfish growing areas in Puget Sound and Pacific coastal bays as approved, conditionally approved or prohibited. The department monitors surveys and samples the commercial shellfish growing beds to determine pollution levels and public health and safety. From 1981 to 1996, the department downgraded the classification of 46,000 acres, but upgraded only about 7,000 acres.
>
> Conditions in some of Washington's commercial shellfish beds are improving while others are getting worse. In general, for all of Puget Sound, more commercial shellfish beds are being downgraded than upgraded. This indicates that overall environmental quality is declining, and results in decreased harvests.
>
> Recreational shellfish-gathering is allowed at 142 public beaches. However, 52 of those beaches are classified as open and 41 beaches are classified as closed because of the presence of pollutants

[13] Part IV deletes the first sentence of the quoted paragraph.

> that pose health and safety dangers to shellfish consumers. The remaining beaches are not yet classified.

The protection presently afforded critical saltwater habitats is patchy and inconsistent, based as it is on the application of diverse local shoreline master programs (by local governments) the state's Hydraulics Code (by the Department of Fish and Wildlife), and local watershed management and shellfish water quality programs.

The effect on shellfish beds is problematic: shellfish are filter feeders less affected by shoreline development than by water quality degradation having its source throughout the watershed (e.g. storm water runoff, failing on-site sewage systems, or uncontrolled agricultural wastes) or from in-water sources (e.g. marinas or boating wastes).

While it is difficult to assess the protective effects (or lack thereof) of an individual regulation such as WAC 173-16 on critical saltwater habitats, the available data indicate the overall set of land use and water quality laws and regulations have not adequately protected the resource.

Potential Environmental Impacts Under WAC 173-26

Future impingement on critical salt water habitats will be minimized, thereby affording a greater measure of protection to these habitats than at present. Intertidal habitats will benefit the most, as these habitats are most likely to be affected at present by small, overwater, non-water dependent structures. Special attention is drawn to shellfish beds by Part III which, in conjunction with other regulatory authorities and management programs, will enable more comprehensive protection for shellfish sanitation.

Critical freshwater habitats, including riverine corridors and other fresh water fish and wildlife conservation areas (220 (2) (c) (iv))

Existing WAC 173-16

WAC 173-16 contains no section which explicitly regulates riverine corridors, however, section 050 (8) describes "some of the features of…[rivers streams and creeks]…which are susceptible to damage…and to provide a basis for the guidelines pertaining to human-use activities…"

Proposed WAC 173-26

Contains provisions which "applies to master program provisions and shoreline management activities within shoreline jurisdiction affecting critical freshwater habitats, including streams, rivers, wetlands, and lakes, their associated channel migration zones, and flood plains."

Part III provides that:

> Recognizing that long stretches of riverine shorelines have been altered or degraded from their natural condition, effective riverine management usually requires a two-part strategy of:
>
> - Preventing damage to river shoreline areas that retain their ecological functions; and
> - Restoring degraded shoreline areas whenever feasible.

> Local governments should base master program provisions for critical freshwater fish and wildlife habitat conservation areas on a comprehensive approach, as described in WAC 173-26-200 (3)(d)(i), (e), (f), and (g). As part of this comprehensive approach, local governments should integrate categories of master program provisions, including those for shoreline stabilization, fill, vegetation conservation, water quality, flood hazard reduction, and specific uses, to protect human health and safety and to protect and restore the corridor's ecological functions and ecosystem-wide processes.
>
> Applicable master programs should contain provisions to protect and restore hydrologic connections between water bodies, water courses, and associated wetlands. For example, master programs should require that dikes, roads, or other structures, when allowed, be constructed or refitted to allow the unrestricted natural flow of water between dry or braided channels, associated wetlands, the main river channel, and associated water bodies. Incentives should be provided to restore water connections that have been impeded by previous development.

Part IV modifies the language above primarily by mandating ("shall" rather than "should") a comprehensive approach to SMP provisions for critical areas, integration of master program provisions, and a watershed-based approach to development of SMP provisions. Part IV also contains specific language addressing the prevention of damage to riverine corridors through the prevention of restrictions to channel movement within the channel migration zone, and sets forth specific standards for uses that may be allowed in the channel migration zone despite some chance that channel restriction could occur.

Existing Conditions & Impacts Under WAC 173-16

The greatest threat to riverine corridors comes from development within those areas. The following description of the status and trends of riparian habitats in urbanizing areas is quoted from Knutson & Naef (1997), the whole of which is incorporated by reference into this environmental impact statement:

> People have traditionally settled in riverine floodplains and along the banks of major streams and lakes (Goldstein et al. 1983, Nabhan 1985). Modern urban settlement near water and throughout watersheds usually entails large-scale removal of native vegetation and its replacement with buildings, pavement, roads, and manicured plantings, all consisting primarily of impervious surfaces. Unlike the effects of forestry, the loss of natural vegetation and consequences to riparian and stream habitats in urbanized areas are usually permanent (Booth 1991). The effects of urban and industrial developments generally result in:
>
> - changes in basin hydrology;
> - loss of riparian habitat;
> - loss of woody debris and other instream structures;
> - degradation of stream channels;
> - reduction in water quality;
> - habitat fragmentation;
> - introduction of pets and exotic pests.
>
> The loss of natural vegetation in riparian and upland areas and its replacement with compacted or largely impervious surfaces changes the hydrology of urbanized watersheds. These changes usually result in a loss of fish and wildlife habitat. Overall, hydrologic changes upset the balance of aggradation and degradation processes that are essential in maintaining healthy stream and riparian ecosystems. The most dramatic and well-studied effect is the increase in the maximum

discharge associated with floods and storm events; peak flows in urbanized watersheds have been known to increase as much as five-fold over natural conditions (Booth 1991).

In an attempt to be close to the water and to 'clean up' areas by replacing them with manicured landscapes, riparian vegetation is often cleared when land is developed. Because riparian habitat supports the greatest number of species compared to other habitats, its protection can provide a significant benefit to fish and wildlife in developed landscapes (Noss 1993).

The loss of riparian vegetation due to urbanization: 1) degrades stream conditions through increased erosion of banks that are no longer armored with roots and debris from natural vegetation, 2) removes a source of logs and organic debris that stabilize streams and provide a source of food and nutrients, 3) increases stream temperatures through shade removal, and 4) reduces the capacity of the riparian area to filter incoming sediments and pollutants (Klein 1979).

Fish-bearing rivers and streams that flow through heavily-developed areas rarely resemble their natural form. Stream beds are replaced with drainpipes and culverts, riparian vegetation is removed, and municipal wastes contribute pollutants, sediments, and excessive nutrients to the water. To accommodate the real estate needs and safety of expanding urban populations, streams and rivers are frequently channelized, diked, or piped underground. For example, 73% of Ravenna Creek in King County now runs through a pipe (Wash. Dept. Ecol. 1981). Loss of riparian vegetation, increased flooding, and stream channel manipulation eliminate large woody debris, pools and riffles, sinuosity, slow flowing side channels, and other essential structural components of fish habitat in urbanized areas. Destruction or severe degradation of fish and wildlife habitat by urbanization is often complete and irreparable (Canning and Stevens 1989).

Streams and rivers flowing through urban landscapes suffer reductions in water quality that impair their ability to support microorganisms, fish, and wildlife. Water quality is reduced through increased sedimentation, chemical pollution, and increases in water temperature. Higher than normal surface flows carry pollution, nutrients, and sediment to streams in large quantities. Surface flows also deliver warmer water to streams than do subsurface flows. Urban stormwater runoff is commonly borne in storm sewers or surface channels and deposited directly into the waterway, with little opportunity to be absorbed, cooled, and cleansed by passing through natural vegetation and soils (King County Planning Division 1980).

One of the greatest impacts of urbanization on wildlife comes from habitat fragmentation (Stenberg et al. 1997). Remaining natural habitat in urban areas typically consists of small, infrequently encountered remnant patches that are isolated from each other (Carleton and Taylor 1983, Goldstein et al. 1983). Wildlife in such settings is limited to highly-adaptive and mobile species with small area or generalized habitat requirements; examples include the American robin, European starling, house sparrow, raccoon, and coyote (Aldrich and Coffin 1980, Quinn 1992). Animals that require large areas of intact natural vegetation, such as some forest interior songbirds and elk, are lost during habitat fragmentation associated with urbanization (Aldrich and Coffin 1980, Bryant and Maser 1982).

Potential Environmental Impacts Under WAC 173-26

Over time, under both Part III and Part IV, the rate of habitat degradation as described above in riverine corridors should slow state-wide, and in discrete areas subject to redevelopment should see some improvement due to restoration efforts.

Flood Hazard Reduction (220 (3))

Existing WAC 173-16

WAC 173-16 contains no section which explicitly addresses flood hazard reduction, however, section 050 (9) describes "some of the features of…[flood plains]…which are susceptible to damage…and to provide a basis for the guidelines pertaining to human-use activities…"

Proposed WAC 173-26

Requires that master programs shall implement integrated flood hazard reduction measures in accordance with the following principles. Part III states:

> Flooding of rivers, streams, and other shorelines is a natural process that is affected by factors and land uses occurring throughout the watershed. Past land use practices have disrupted hydrological processes and increased the rate and volume or runoff, thereby exacerbating flood hazards and reducing ecological functions. Flood hazard reduction measures are most effective when integrated into comprehensive strategies that recognize the natural hydrogeological and biological processes of water bodies. Over the long term, the most effective means of flood hazard reduction is to prevent or remove development in flood-prone areas, to manage storm water within the flood plain, and to maintain or restore the riverine system's natural hydrological and geomorphilogical processes.
>
> Structural flood hazard reduction measures, such as diking, even if effective in reducing inundation in a portion of the watershed, can intensify flooding elsewhere. Moreover, structural flood hazard reduction measures can damage ecological functions crucial to fish and wildlife species, bank stability, and water quality. Therefore, structural flood hazard reduction measures shall be avoided wherever possible. When necessary, they shall be accomplished in a manner to minimize change to shoreline ecological functions and ecosystem-wide processes. In such cases, set back levees shall be preferred over levees near the floodway.

Existing Conditions & Impacts Under WAC 173-16

Flood hazards are managed under the cooperative federal-state-local program based on the National Flood Insurance Program administered by the Federal Emergency Management Agency, and regulated under both the Critical Area Ordinance provisions of the Growth Management Act, and Washington's Flood Plain Management Act (Chapter 86.16 RCW).

Flood hazard and flood damage remains a problem in most basins of western Washington and in eastern Washington especially in the Yakima and Okanogan basins. During the decade of the 1990s flood damage in Washington state exceeded one billion dollars.

The Washington Department of Community, Trade, and Economic Development's manual, *Optional Comprehensive Plan Element for Natural Hazard Reduction* (Growth Management Program, 1999), the whole of which is incorporated by reference into this environmental impact statement, characterizes Washington flood plains and flooding as follows:

> In Washington there are two types of significant flooding:
>
> - Large riverine events

- Ground water flooding events

Riverine flooding occurs when an increase in the volume of water in a river or stream channel occurs, and the river or stream overflows its banks and spills onto the adjacent floodplain. Large riverine floods can have great impact due to their scale, associated with densely populated areas, and the possibility of secondary hazards (such as landsliding and structural fires). Factors influencing damage from these events include high flow volumes and velocity, aggradation, bank erosion, and in-stream debris. Not surprisingly, a comparison of the locations in Washington state rivers and counties experiencing repetitive flood disasters, indicates that those counties with the most extensive river systems, such as King, Snohomish, Lewis, Skagit, and Grays Harbor, are also the counties which experience the most frequent flood events.

Despite the division of Washington by the Cascade Mountains into "wet" and "dry" halves, riverine flooding does occur throughout the state. The differing climates do, however, create different flood regimes east and west of the Cascades. Western Washington, which is characterized by "wet" winters with major rainfall in the lower elevations and heavy winter snowfall in the higher elevations, sees nearly 70 percent of its floods between November and February. \the rivers which flow out of the Olympic Mountain Range and off the western slopes of the Cascade Mountains flood frequently. Large riverine floods are the flood events most commonly associated with major storms, such as the floods that resulted from the 1995-1996 storms in Western Washington. Some of the most significant flooding occurs when rain falls on early snows, leading to an unseasonably early melting of snowpack. Conversely, the relatively "dry" winters of Eastern Washington make direct large storm-related flooding uncommon. Although the February 1996 floods occurred during "winter," the meteorological conditions were actually spring-like, with heavy, warm rains on snow. Eastern Washington is particularly subject to flash floods, such as occurred in 1998 in Ferry County and Ephrata. It is also vulnerable to spring snowmelt, such as occurred in the Methow and Okanogan Valleys.

The nature and extent of a flood event is the result of the complex hydrologic response of the landscape to the storm or melt runoff. In general, the more quickly water from a drainage basin concentrates in a stream or depression, the greater the level of flooding. Factors affecting this hydrologic response include:

- landuse and land management practices
- hillslope gradient and aspect
- drainage patterns and density
- surficial deposits
- soil texture and permeability
- water storage capacity
- land cover and vegetation.

Most counties in the state experience one to two serious events per year. With the exception of five sparsely populated counties in Eastern Washington, every county has suffered multiple federally declared disasters; six counties suffered four federally declared disasters in three years. Recurring disasters cause undue hardship on thousands of Washington state residents; result in enormous business, agriculture and other commercial losses; and cost millions of local, state, and federal tax dollars to repair.

The financial impacts of these disasters seems to increase every year. The annual cost of all natural disasters in the United States has doubled in the past decade, from roughly $25 billion a year to $50 billion. The reasons for the increase in costs are not clear. Many experts contend that increased urbanization in vulnerable areas is responsible. A[nother] possible explanation for these increased costs includes our increased dependence on man-made structures, such as utility lines,

which are fragile in the face of disasters. Another cause could be the extensive development we have allowed in high risk areas as a result of our belief that the measures taken to tame or control natural phenomena, such as rivers or steep hillsides, will ensure our protection.

Potential Environmental Impacts Under WAC 173-26

The provisions of Section 220 (3) will supplement the flood plain regulatory programs under the Flood Plain Management Act and the Growth Management Act, and promote integration of shoreline master program flood management provisions with other local programs adopted under the FPMA and the GMA. This integration will foster more comprehensive and cost-effective approaches to flood hazard management, thereby resulting in reduced damages to public and private property, better integration of habitat conservation concerns into management plans, and a lower rate of riparian habitat loss and degradation.

Public Access (220 (4))

Existing WAC 173-16

Addressed in a broad sense in the Recreation section (WAC 173-16-060 (21)) which states that:

> (a) Priority will be given to developments…which provide recreational uses and other improvements facilitating public access to shorelines.

Also addressed in other sections, the net effect of which is to create a 'network' of requirements and inducements for provision of public access.

Proposed WAC 173-26

Part III provides that local master programs shall:[14]

> (i) Promote and enhance the public interest with regard to rights to access waters held in public trust by the state while protecting private property rights and public safety.
>
> (ii) Protect the rights of navigation and water-dependent uses.
>
> (iii) To the greatest extent feasible consistent with the overall best interest of the state and the people generally, protect the public's opportunity to enjoy the physical and aesthetic qualities of shorelines of the state, including views of the water.
>
> (iv) Regulate the design, construction, and operation of permitted uses in the shorelines of the state to minimize, insofar as practical, interference with the public's use of the water.

Also provides, in other sections, requirements and inducements for the provision of public access associated with specific kinds of shoreline development.

Existing Conditions & Impacts Under WAC 173-16

The following description is quoted from *Washington State Coastal Zone Management Section 309 Assessment and Strategy, 1997* (Shorelands and Water Resources Program, 1997.)

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[14] Part IV is not significantly different from Part III.

As of 1985 Washington's 2,200 miles of inland marine shoreline had approximately 700 public access sites occupying about 425 miles of shoreline, or about 19 percent of that shore (Scott, et al., 1986). Since only half that public shore has access from the uplands, the public has real access to only about 10 percent of the inland marine waters of Puget Sound. No more recent information is available for Washington marine shorelines, and no such comprehensive studies are known to have been completed for lake, stream, or river shorelines.

Public use of shorelines and the demand for public access can be readily characterized from a 1996 state-wide public opinion survey (Social and Economic Sciences Research Center, 1996). Forty two percent of Washingtonians go to a shoreline at least once a month, and 80% go at least several times a year. Lakes, rivers and streams, and Puget Sound are about equally popular as "most frequently visited" while the ocean is the least frequent first choice (13%). When asked, "Is there adequate public access to shorelines in Washington?" 63% responded "enough" and 37% "not enough." When asked what they found 'bothersome' to their shoreline visits, 75% identified "crowds," but this choice was fifth behind litter, site abuse, building development, and poor water quality.

Overall, the principal impediments to provision of adequate public access are considered to be:

- inadequate funding for acquisition of new sites;
- inadequate funding for maintenance of existing sites; and
- private property owner resistance to siting adjacent public facilities.

Potential Environmental Impacts Under WAC 173-26

WAC 173-26 essentially codifies much of the public access guidance which was issued by Ecology during the past twenty years, and which was 'field tested' by many local governments in both projects and local master programs. Incremental improvements to public access will occur to the extent that new development approvals are conditioned to require public access to shorelines.

Poorly sited or designed public access to shorelines has the capacity to adversely affect shoreline habitats and resources. A provision that local shoreline master programs

> Do not allow public access improvements that would cause significant adverse impacts to shoreline ecological functions that cannot be mitigated. Require that public access improvements with the potential to degrade ecological functions be designed to minimize adverse impacts.

should largely eliminate future adverse environmental effects of new public access siting, development, and operation.

Vegetation Conservation (220 (5))

Existing WAC 173-16

WAC 173-16 contains no section which explicitly addresses vegetation conservation, however, various sections of the rule clearly state requirements or inducements for maintenance of vegetative buffers or the like (e.g. section 050 (6) regarding marshes, bogs, and swamps, section 050 (9) regarding floodplains, section 060 (1) regarding agricultural practices, section 060 (3) regarding forest management practices, section 060 (8) regarding residential development, and section 060 (9) regarding utilities.

Proposed WAC 173-26

The vegetation conservation section has broad application across the various environmental designations, the general master program provisions, and shoreline uses. Part III states:[15]

> Vegetation conservation includes activities to protect and restore vegetation along or near marine and freshwater shorelines that contributes to the ecological functions of shoreline areas. Vegetation conservation provisions include the prevention or restriction of plant clearing and earthgrading, vegetation restoration, and the control of invasive weeds and nonnative species.
>
> Unless otherwise stated, vegetation conservation does not include those activities covered under the Washington State Forest Practices Act, except for conversion to other uses and those activities over which local governments have authority.
>
> As with all master program provisions, vegetation conservation provisions apply even to those shoreline uses and developments that are exempt from the requirement to obtain a permit. Like other master program provisions, vegetation conservation standards do not apply retroactively to existing uses and structures, such as existing agricultural practices.

Part III provides that vegetation conservation is to be implemented through the following principles:[16]

> The intent of vegetation conservation is to protect and restore the ecological functions and ecosystem-wide processes performed by vegetation along shorelines. Vegetation conservation should also be undertaken to protect human safety and property, to increase the stability of river banks and coastal bluffs, to reduce the need for structural shoreline stabilization measures, to improve the visual and aesthetic qualities of the shoreline, to protect plant and animal species and their habitats, and to enhance shoreline uses.
>
> Master programs shall include provisions to protect and restore vegetation needed to sustain the ecological functions and ecosystem-wide processes, to avoid adverse impacts to soil hydrology, and to reduce the hazard of slope failures or accelerated erosion.
>
> In ecologically degraded areas, master program provisions should contribute to the restoration of ecological processes and functions provided by vegetation as development or redevelopment occurs.
>
> Master programs should be directed toward achieving the vegetation characteristics described in *Management Recommendations for Washington's Priority Habitats*, prepared by the Washington state department of fish and wildlife where applicable and based on scientific And technical information
>
> Local governments should address ecological functions and ecosystem-wide processes provided by vegetation as described in WAC 173-26-200 (3)(d)(i), (e), (f), and (g).
>
> Local governments may implement objectives through a variety of measures, where consistent with Shoreline Management Act policy, including clearing and grading regulations, setback and buffer standards, critical area regulations, conditional use requirements for specific uses or areas, and mitigation requirements.
>
> In establishing vegetation conservation regulations, local governments must use all available scientific and technical information, as described in WAC 173-26-200 (2)(a). At a minimum, local

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[15] Part IV is nearly identical, while noting the value of vegetation conservation to PTE species.

[16] Additionally, Part IV includes specific standards for vegetation conservation, where Part III allows local governments to develop their own standards based on scientific and technical information.

governments should consult shoreline management assistance materials provided by the department.

Existing Conditions & Impacts Under WAC 173-16

Development of riparian corridors, and occupancy of developed areas, progressively results in the degradation or elimination of native vegetation through degradation and/or replacement with managed landscapes, often dominated by exotic species. This habitat degradation has adverse secondary effects on fish and wildlife populations and the value of riparian areas as migration corridors. The degree of the adverse impact is, of course, highly variable depending on the intensity of development, the character of the existing native vegetation community, and the nature of the local shoreline master program. (See also "Riverine Corridors and other fresh water fish and wildlife conservation areas (220 (2) (c) (iv))" above.)

Some local governments already include vegetation management provisions in their shoreline master programs based on recommendations in the *Shoreline Management Guidebook* (Shorelands and Coastal Zone Management Program, 1994), but these recommendations are not as comprehensive or far-reaching as the proposed provisions of WAC 173-26.

Potential Environmental Impacts Under WAC 173-26

The proposed rule will assure that all shoreline master programs include vegetation conservation provisions, that future damage to riparian areas is minimized, and that vegetation is at least partly restored in areas undergoing redevelopment.

Possibly more than any other aspect of WAC 173-26, the Vegetation Conservation provisions at section 220 (5) constitute a new approach in shoreline management — "…to protect and restore the ecological functions and ecosystem-wide processes performed by vegetation along shorelines…" — for the purpose of implementing the provision of the Shoreline Management Act which states: "…protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life…" (RCW 90.58.020). The Vegetation Conservation provisions will over-lay, and therefore affect, the way all shoreline modifications and shoreline uses are designed, built, and operated.

Over time, the rate of habitat degradation on shorelines should slow state-wide, and in discrete areas should see some improvement due to restoration efforts.

Water Quality (220 (6))

Existing WAC 173-16

WAC 173-16 contains no section which explicitly addresses water quality; however, various sections of the rule clearly address protection of water quality (e.g. section 060 (1) agricultural practices, section 060 (8) residential development, section 060 (14) land filling, and section 060 (16) dredging.

Proposed WAC 173-26

States that:

> Shoreline master programs shall include provisions to ensure that new development within shoreline jurisdiction does not cause significant adverse impacts to ecological functions or ecosystem-wide processes by altering stormwater quality, quantity, or flow characteristics.

Existing Conditions & Impacts Under WAC 173-16

Water quality in Washington State is regulated and managed primarily through the Water Pollution Control Act (Chapter 90.48 RCW), Dairy Nutrient Management Act (Chapter 90.64 RCW), Puget Sound Water Quality Protection Act (Chapter 90.71 RCW), and Shellfish Protection Districts Act (Chapter 90.72 RCW). Water quality is addressed also by the Shoreline Management Act (Chapter 90.58 RCW) at section 90.58.020: "…This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life…" For a thorough review of Washington's water quality laws see Washington Department of Ecology (1999).

The 1998 Washington State Water Quality Assessment (Butkus, 1997) , the whole of which is incorporated by reference into this environmental impact statement, assessed estuary, stream, and lake water quality state-wide and concluded:

- Of the designated uses assessed, no impairment was found in 35% of all streams, 32% of estuaries, and 63% of lakes statewide.
- All assessed aquatic life uses were fully supported in 61% of all streams and 28% of estuaries statewide.
- Swimming was assessed as fully supported in 57% of all streams and 97% of estuaries statewide.
- Aesthetic enjoyment due to trophic state was fully supported in 63% of lakes statewide.
- The primary cause of use impairment in streams is fecal coliform.
- The primary cause of use impairment in estuaries is temperature created by natural conditions.
- The primary cause of human-caused impairment in estuaries is fecal coliform.
- The primary cause of use impairment in lakes is excessive nutrients.
- The primary human-caused source of pollution that is impairing all surface waters (streams, estuaries, and lakes) is agriculture.

A recent nation-wide assessment of estuarine eutrophication[17] (Bricker, et al., 1999) addressed ten estuaries in Washington state: Columbia River; Willapa Bay; Grays Harbor; Puget Sound; Hood Canal; Whidbey Basin & Skagit Bay; South Puget Sound; Port Orchard System; Bellingham, Padilla and Samish Bays; and Sequim and Discovery Bays. Eu-

[17] Eutrophication is the accelerated production of organic matter, particularly algae, in a water body. It is usually caused by an increase in the amount of nutrients being discharged into the waterbody. As a result of accelerated algal production, a variety of impacts may occur, including nuisance and toxic algal blooms, depleted dissolved oxygen, and loss of submerged aquatic vegetation.

trophic conditions and trends in most were rated Moderate ("symptoms generally are less periodic and/or occur over medium or smaller areas"). Hood Canal and South Puget Sound were rated High ("symptoms generally occur periodically and/or over extensive areas"). Columbia River was rated Low ("few local symptoms occur at more than minimal levels). Symptoms in all except the Columbia River are expected to worsen by 2020. Both Hood Canal and South Puget Sound are naturally susceptible to eutrophication because of poor flushing (water exchange) characteristics, and both are subject to a "high overall human influence." Other estuaries in Washington State have better flushing characteristics and are therefore better able to overcome human influence.

Potential Environmental Impacts Under WAC 173-26

By requiring that local shoreline master programs "prevent impacts to water quality that significantly reduce shoreline ecological functions, aesthetic qualities, or recreational opportunities" and "ensure mutual consistency between shoreline management provisions and other regulations that address water quality, including public health, storm water, and water discharge standards" the proposed rule will exert a useful function of integrating the diversity of water quality management programs in the shoreline zone.[18] This should, if not countered by factors outside of shoreline jurisdiction, lead to a net improvement in water quality.

Shoreline Modification Activities (WAC 173-26-230

Shoreline Stabilization (230 (3) (a))

Existing WAC 173-16

Provides policy guidance as follows:

> (a) Bulkheads and seawalls should be located and constructed in such a manner which will not result in adverse effects on nearby beaches and will minimize alterations of the natural shoreline.
>
> (b) Bulkheads and seawalls should be constructed in such a way as to minimize damage to fish and shellfish habitats. Open-piling construction is preferable in lieu of the solid type.
>
> (c) Consider the effect of a proposed bulkhead on public access to publicly owned shorelines.
>
> (d) Bulkheads and seawalls should be designed to blend in with the surroundings and not to detract from the aesthetic qualities of the shoreline.
>
> (e) The construction of bulkheads should be permitted only where they provide protection to upland areas or facilities, not for the indirect purpose of creating land by filling behind the bulkhead. Landfill operations should satisfy the guidelines under WAC 173-16-060(14).

Proposed WAC 173-26

Under both Part III and Part IV, takes a mixed approach blending both prescriptive measures and performance standards to regulating shoreline erosion control for the purpose of

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[18] Part IV specifically requires "...prevention of impacts to water quality and storm water quantity..." Part IV also requires that water quality and storm water provisions protect PTE species.

minimizing adverse environmental effects to shoreline processes and habitats. Certain practices, presently conditionally allowable, would be disallowed or further restricted. Much (but not all) new development would be required to be sited and constructed such that shoreline erosion control measures would be unnecessary. New shoreline stabilization structures would be allowable only when there is a clear demonstration of need. Mitigation for adverse environmental effects will be required. Part IV includes specific standards which address impacts to T&E species.

Existing Conditions & Impacts Under WAC 173-16

Shoreline erosion conditions and stabilization practices vary significantly on Puget Sound beaches, Pacific Ocean beaches, on lake shores, and river banks.

Inland Marine Waters

The shores of Washington's inland coast—greater Puget Sound—undergo both shoreline erosion and landsliding. The overall rates of shoreline retreat are usually minor, maybe an inch or two a year, but in some areas may average as much as half a foot per year. This is usually due to a combination of bluff undercutting and failure of steep slopes, resulting in landslides. At any particular location, landslides occur infrequently, often decades apart. Simple shoreline wave erosion *by itself* is not often the problem in Puget Sound.

Shoreline erosion is a concern to both coastal property owners and the users and managers of coastal public resources. Property owners are naturally concerned with protecting their investments in land and buildings. Unfortunately, houses and other buildings are often built dangerously close to the shoreline. Most property owners react to incidents of erosion or landsliding by erecting erosion control structures such as concrete or rock bulkheads. If properly constructed, these shoreline armoring structures can slow most forms of wave induced shoreline erosion for a period of time, but will probably do little to prevent continuing landsliding. Many shoreline property owners consider shoreline armoring critical to the protection of their real estate investment.

Resource managers are, of course, concerned about any adverse effects on the habitats which support biological resources such as fish and shellfish, and are charged with protecting the public property right in those resources.

The Department of Ecology's Coastal Erosion Management Strategy project for Puget Sound (conducted between 1993 and 1995; Canning & Shipman, 1995; Terich, Schwartz & Johannessen, 1994; Macdonald, et al., 1994; Thom, et al., 1994) , the whole of each being incorporated by reference into this environmental impact statement, revealed that shoreline armoring typically results in the following adverse effects:

- sediment supply to nearby beaches is cut off, thus leading to "starvation" of the beaches for the sand and other fine grained materials that typically make up a beach;
- the hard face of shoreline armoring, particularly concrete bulkheads, reflects energy back onto the beach, thus exacerbating beach erosion;

- in time, a sandy beach is transformed into gravel or cobbles, and may even be scoured down to bedrock, or more commonly in the Puget Sound basin, a hard clay. The footings of bulkheads are exposed, leading to undermining and failure;
- vegetation which shades the upper beach is eliminated, thus degrading the value of the beach for spawning habitat; and
- any transformation of the character of the beach affects the kind of life the beach can support.

In addition, there are impacts of land clearing practices associated with shoreline armoring:

- Ironically, property owners often exacerbate their inherent slope stability problems in two ways. First, they attempt to maximize views by building their homes dangerously close to the bluff edge. Second, they further enhance their views of Puget Sound by removing much or all the vegetation from the bluff face and top. Both of these practices further destabilize banks and bluffs, triggering more frequent or more severe slope failures.
- A common sequence of events is: land is cleared and a house is built as close to the edge of the bluff as is allowed; trees and large shrubs are removed from the top and face of the bluff to enhance water views; within a few years there is a localized landslide at the site, usually during a wet winter; the property owner applies for a permit to construct shoreline armoring as protection from further landsliding. In fact, most armoring will do little to prevent future landsliding.
- The rationale for constructing shore protection devices is often mixed up with many non-geologic motivations. Bulkheads are often viewed as landscape improvements or as convenient ways to improve beach access on otherwise difficult sites. On a bluff shoreline, the bulkhead and the terrace behind it provide an excellent place to store a small dinghy, to place a picnic table, or to serve as the foundation of a stairtower. In doing so, the native vegetation is replaced by a lawn with few or no shrubs, and the overhanging vegetation typical of Puget Sound beaches is eliminated.

Shoreline armoring is a common practice in Puget Sound, more so in the south and central Puget Sound counties of Thurston, Mason, Pierce, Kitsap, King, and Island.

The best information on the amount and annual rate of armoring is for Thurston County, based on a thorough inventory of marine shoreline armoring (Morrison, Kettman & Haug, 1993). In 1977, 14 percent of Thurston County's 103 miles of marine shoreline were armored. By 1993 that had increased to 29 percent, or 30 miles. The annual rate of armoring was about one percent, or one mile per year.

Throughout all of Puget Sound, the annual rate of armoring is estimated to be at least 1.7 miles per year during 1993 to 1995. An equal amount of existing armoring was repaired or

replaced during this time. This information is considered to be an under-estimate. Seventy five percent of this new armoring was constructed in Mason, Kitsap, and Pierce counties.[19]

Pacific Ocean Coast

For the most part, the Pacific Ocean coast is accretional and has been for centuries. Beginning a few decades ago the rate of accretion slowed (Phipps & Smith, 1978; Phipps, 1990), and during the past decade incidents of erosion have occurred along the coast at discrete locations: Fort Canby State Park; the northerly four or so miles of the Long Beach Peninsula; Cape Shoalwater; the Grayland area; at Westhaven State Park; and at Point Brown. The Pacific Ocean coast is especially vulnerable to short-term erosion incidents during El Niño winters (Kaminsky, Ruggerio & Gelfenbaum, 1998).

Shoreline armoring is uncommon on the Pacific Ocean beaches, largely because of [1] the high construction cost relative to the value of structures at risk, and [2] the status of the ocean beaches as a shoreline of statewide significance[20]. The principal armoring projects have been placed at Cape Shoalwater to protect SR 105 and at Point Brown to protect five condominium buildings. These structures have not been monitored for adverse environmental effects[21].

Streams and Rivers

Most development along streams and rivers occurs in the lower reaches where meandering is common. Meandering, by its very nature, is a constant dynamic of bank erosion and accretion. Along these reaches rip rap revetment armoring or bioengineered structures are generally the solution of choice. At present, there is little quantitative information which characterizes the extent and nature of stream and river bank armoring or stabilization.

Potential Environmental Impacts Under WAC 173-26

In general, hard approaches to shoreline erosion control will be discouraged, and soft approaches encouraged. Still, there will remain many high energy sites where effective shoreline erosion control will require some form of armoring.

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[19] This data was developed by monitoring the State Environmental Policy Act weekly Register between May 1993 and October 1995 for marine shoreline erosion control actions. The quality of information in the SEPA Register is variable. Not all local governments process permit applications and report information in the same manner. Some applications for shoreline armoring fall below a threshold for SEPA Register reporting altogether. As a result, the information developed from the SEPA Register should be regarded as indicative, not absolutely accurate, and conservative in that it does not capture all marine erosion control actions.

[20] The shorelines of state-wide significance provisions of the Shoreline Management Act (RCW 90.58.020) provide that "…the interests of all the people shall be paramount in the management of shorelines of state-wide significance…" The Act further requires that on shorelines of state-wide significance that local master programs "shall give preference to uses in the following order of preference which: (1) recognize and protect the state-wide interest over local interest; (2) preserve the natural character of the shoreline; and other provisions.

[21] What monitoring has been carried out has been more for the purpose of monitoring the condition of the structure and any beach lowering which could adversely affect the structure.

The most important cumulative effect of Puget Sound shoreline stabilization is to cut off the supply of sediments from eroding banks and bluffs which maintain the beaches. When a sufficient portion of a drift cell has been armored, for a sufficient period of time (usually a few decades), the cumulative effect is a combination of beach lowering and coarsening. Two key secondary effects are [1] that the beach lowering exposes the footings of shoreline armoring, thus necessitating repair or replacement; and [2] the beach coarsening changes the beach habitat, affecting the creatures which can live there. (Canning & Shipman, 1994; Thom, Shreffler, and Keith Macdonald, 1994; Macdonald, Simpson, Paulsen, Cox, and Gendron. 1994.)

Marine shorelines are not particularly amenable to vegetative shoreline erosion control because [1] there are few erosion-resistant plant materials which tolerate being rooted in salt water and [2] the wave energy on marine shorelines is generally such vegetative erosion control alone is inadequate to resist erosive force where shoreline retreat is a threat to structures.

Fresh water shores (lakes, streams and rivers) are more amenable to stabilization using vegetation. Still, in high energy situations bioengineered solutions combining armoring with vegetation will be the preferred alternative where shoreline stabilization must be applied.

Over all, the proposed rule will foster more use of softer approaches to shoreline stabilization, but will not eliminate all application of hard approaches. Future adverse physical, biological, and ecological effects to shorelines and beaches will be moderated in comparison with the past.

In conjunction with other sections of the proposed rule which provide for greater setbacks from the shoreline, avoidance of geologically hazardous areas, and vegetation conservation, the net effect will be to lessen the need for shoreline stabilization all together, and especially shoreline armoring.

Piers and Docks (230 (3) (b))

This rule section addresses two vastly different scales of construction: commercial, industrial, and public piers and docks, and small facilities associated with a single family residence.

Existing WAC 173-16

Provides general policy guidance regarding: floating docks, preference for open-pile piers, priority for community docks over single-use docks, cumulative effects of single-use docks, and water quality.

Proposed WAC 173-26

Provides distinct policy guidance regarding commercial and public piers and docks, and small facilities associated with a single family residence, including performance standards; Part III states:

> New piers and docks shall be allowed only for water-dependent uses or public access. Pier and dock construction shall be restricted to the minimum size necessary to meet the needs of the proposed water-dependent use. Water-related and water-enjoyment uses may be allowed as part of mixed-use development on over-water structures where they are clearly auxiliary to and in support of water-dependent uses, provided the minimum size requirement needed to meet the water-dependent use is not violated.
>
> New pier or dock construction, excluding docks accessory to single-family residences, should be permitted only when the applicant has demonstrated that a specific need exists to support the intended water-dependent uses. If a port district or other public or commercial entity involving water-dependent uses has performed a needs analysis or comprehensive master plan projecting the future needs for pier or dock space, and if the plan or analysis is approved by the local government and consistent with these guidelines, it may serve as the necessary justification for pier design, size, and construction. The intent of this provision is to allow ports and other entities the flexibility necessary to provide for existing and future water-dependent uses.
>
> Where new piers or docks are allowed, master programs should contain provisions to encourage new residential development to two or more dwellings to provide joint use or community dock facilities rather than allow individual docks for each residence.
>
> Piers and docks, including those accessory to single-family residences, shall be designed and constructed to avoid or, if that is not possible, to minimize and mitigate the impacts to ecological functions and environmental critical areas resources such as eelgrass beds and fish habitats and processes such as currents and littoral drift. See WAC 173-26-220 (2)(c). Master programs should require that structures be made of materials that have been approved by applicable state agencies.

Part IV, in addition to language referencing T&E species, also contains specific provisions requiring new multi-unit residential development to use joint-use docks.

Existing Conditions & Impacts Under WAC 173-16

Larger commercial and public piers and docks are commonly associated with urban harbors of Puget Sound and the coastal estuaries, and to a lesser degree the Columbia – Snake river inland waterway system. The private, single family ("single use") pier or dock is commonly associated with lake shores state-wide and protected embayments of Puget Sound. During the past twenty years the number and density of single use piers and docks in some Puget Sound embayments and some lakes has notably increased.

The cumulative effects of over-water structures, especially the cumulative effects of private dock and pier proliferation, has been a question for some local government shoreline planners and administrators for many years. In response to inquiries, in October and November, 1995, Shorelands Program conducted a reconnaissance inquiry, and found that the impacts of over-water structures on marine habitats can be summarized as follows[22]:

1. the shading of the over-water structure and any boats moored to them;
2. pollutant inputs from boats and associated upland activities;
3. sediment transport disruption of groin-like structures

[22] The list is not rank ordered; the numbering is only for convenience of referencing. Not all factors are necessarily significant at a particular location.

4. intertidal and subtidal habitat degradation and burial by structures waterward of ordinary high water;

5. interference with near-shore navigation and other public trust rights;

6. interference with near-shore currents

7. land use, aquatic use, and activity conflicts, including interference with the public's right to use navigable waters;

8. aesthetics of development proliferation;

9. behavioral disturbance of fish and wildlife;

10. prop wash scour on bottom by large boats, especially ferries;

11. leaching of preservatives from pilings and boat bottoms;

12. near-shore uplands vegetation removal, leading to habitat alteration, lessened woody debris input to beach;

13. bottom disturbance by floating docks.

Potential Environmental Impacts Under WAC 173-26

Application of the proposed rule should substantially reduce or mitigate the adverse effects of pier and dock construction and operation.

Fill (230 (3) (c))

Existing WAC 173-16

Provides policy guidance on landfilling, and performance standards with respect to protection of ecological values, minimization of hazards, erosion prevention, and water quality.

Proposed WAC 173-26

Provides policy guidance on landfilling, and performance standards linked to section 200 (2)(c) regarding protection of ecological values. Fills waterward of ordinary high water are restricted:

> Fills waterward of the ordinary high-water mark shall be allowed only when necessary to support a water-dependent use, public access, cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan, mitigation action, environmental restoration, or beach nourishment or enhancement project. Fills waterward of the ordinary high-water mark for any use except ecological restoration should require a conditional use permit.

Existing Conditions & Impacts Under WAC 173-16

The cascading, cumulative adverse environmental effects associated with land filling can include:

- On marine shores, intertidal habitat loss through direct burial, leading to:
    - Stress on fish and wildlife populations dependent on shallow water habitats, such as increased predation on juveniles dependent on shallow water to escape capture

- On lake shores, shallow water habitat loss through direct burial, leading to:
  - Stress on fish and wildlife populations dependent on shallow water habitats
- On marine shores, disruption of long-shore drift patterns, leading to:
  - A down-drift 'groin effect' leading to:
    - Beach 'starvation' and lowering and coarsening of the beach, leading to
      - Changes in the composition of intertidal fauna
      - And increased shoreline erosion of downdrift properties
- interference with the public's right to access and use navigable waters

  Indeed, it was a landfill in Lake Chelan which was determined by the Washington Supreme Court to be illegal (Wilbour v. Gallagher, 77 Wash. 2nd 306, 462 P.2nd 232 (1969)), which in turn precipitated adoption of the Shoreline Management Act so as to prevent such actions in the future.

Adoption of the Shoreline Management Act and implementation under WAC 173-16 halted the most egregious beach filling as exemplified by pre-SMA practices on the shores of Hood Canal.

Potential Environmental Impacts Under WAC 173-26

Application of the proposed rule should result in further reductions in landfill, thus slowing the rate of shallow subtidal and intertidal habitat elimination and degradation.

Breakwaters, Jetties, Groins, etc. (230 (3) (d))

Existing WAC 173-16

Provides policy guidance on breakwaters, and performance standards with respect to preferences for floating breakwaters, and minimization of adverse effects to littoral drift and navigation. Provides policy guidance on jetties and groins, and performance standards with respect to minimization of adverse effects to littoral drift, wildlife, and aesthetics.

Proposed WAC 173-26

Part III provides that:

> Breakwaters, jetties, groins, and weirs located waterward of the ordinary high-water mark shall be allowed only where absolutely necessary to support water-dependent uses, public access, shoreline stabilization, or other specific public purpose. Breakwaters, jetties, groins, weirs, and similar structures should require a conditional use permit, except for those structures installed to protect or restore ecological functions, such as large woody debris installed in streams. Such structures shall be designed to protect or restore ecological functions and protect critical areas and shall provide for mitigation according to the sequence defined in WAC 173-26-020.

Part IV, in addition to language referencing T&E species, also contains specific provisions mandating conditional use permits for these types of structures.

Existing Conditions & Impacts Under WAC 173-16

Breakwaters, jetties and groins are a diverse grouping of shoreline structures with fundamentally differing purposes. Breakwaters are off-shore structures generally constructed parallel to the shore for the purpose of protecting harbor or marina entrances from the full effect of waves. Jetties are subtidal structures generally placed in pairs at the entrance to embayments for the purpose of 'jetting' currents through the entrance for the purpose of maintaining channel depth. Groins are intertidal structures constructed perpendicular to the shore for the purpose of trapping drift material thus 'building up' the beach updrift of the groin. As such, their environmental effects are fundamentally different.

Severe adverse environmental effects appear to be associated only with groins which effect a

- Disruption of long-shore drift patterns, leading to:
    - A down-drift 'groin effect' leading to:
        - Beach 'starvation' and lowering and coarsening of the beach, leading to
            - Changes in the composition of intertidal fauna
            - And increased shoreline erosion of downdrift properties

Adoption of the Shoreline Management Act and implementation under WAC 173-16 placed restrictions on the construction of groins; few groins are constructed in comparison with the pre-SMA era.

Potential Environmental Impacts Under WAC 173-26

Application of the proposed rule should result in further refinement of mitigative requirements for breakwaters, jetties, groins, etc., in general, and especially groins, leading to a lower rate of habitat degradation. The requirement for a conditional use permit (CUP) will lead to greater state oversight.

Beach and Dune Management (230 (3) (e))

This section applies to "Washington's dunes and their associated beaches [which] lie along the Pacific Ocean coast between Point Grenville and Cape Disappointment." These beaches are also subject to the Seashore Conservation Act of 1970 which is implemented by the Washington Parks and Recreation Commission.

Existing WAC 173-16

WAC 173-16 contains no section which explicitly addresses beach and dune management. However, the Shoreline Management Act identifies the ocean coast dunelands as a shoreline of statewide significance (RCW 90.58.020) which establish a higher standard of management which states "…the interests of all the people shall be paramount in the management of shorelines of state-wide significance…"

Proposed WAC 173-26

Provides that beaches and dunes shall be managed consistent with their status as a shoreline of statewide significance.

Provides that "dune modification" may be undertaken

> only as a conditional use unless a jurisdiction-wide or regional plan for dune management addressing grading, revegetation, and monitoring is carried out consistent with state and federal flood protection standards and approved by the local government and the department

and that

> Dune modification to protect views of the water shall be allowed only where the view is completely obstructed for residences or water-enjoyment uses and where it can be demonstrated that the dunes did not obstruct views at the time of original occupancy, and then only in conformance with…[all provisions of this section].

Existing Conditions & Impacts Under WAC 173-16

Dune modification is practiced in the Pacific Ocean beach dunelands of southwest Washington. Dune modification involves earthmoving, that is, cutting the tops of dunes and filling dune troughs. The purpose of dune modification is to gain or regain views of the ocean from the first row of residences built behind the primary dune[23].

Local governments in southwest Washington have various approaches to regulating dune modification in their local shoreline master programs or other ordinances, ranging from implicit or explicit prohibition, to conditional allowance.

The ocean beach dunes are vegetated predominately by one of two introduced beach grasses, either *Ammophila breviligulata* (American Beachgrass) which is native to the Atlantic coast and Great Lakes region of North America, or *Ammophila arenaria* (European Beachgrass or Marram Grass) which is native to Europe. Both species have become naturalized along the Pacific Northwest coast as a result of dune stabilization plantings. Of the two, *Ammophila breviligulata* is the most successful and widespread. (Seabloom, 1991; Seabloom & Wiedemann, 1994). If dune cutting is not too deep, either species will regenerate, revegetating the cut dune, and eventually re-establishing a tall, view-blocking dune. In the interim, the cut-out dune represents an aesthetic scar to many of the public walking on the beach.

The adverse environmental effects associated with dune modification appear to be less important than the potential risk to public safety. To the extent that the primary dune is lowered, there is an increased risk of storm waves surging through the gap, temporarily flooding properties behind the primary dune. There already exists a similar risk of flood surges

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[23] Washington's southwest coast is composed of dune fields which have accreted, or built up, over many decades. The "primary dune" is the first dune behind the beach, or conversely, the most waterward of the dunes. The secondary dunes are all those behind, or landward, of the primary dune. Between the dunes are dune troughs or deflation plains. If the elevation of the deflation plains is sufficiently low to expose the water table, then a wetland will develop. In some instances a dune trough is sufficiently deep that a pond or small lake will form. The term "foredune" is occasionally applied to the primary dune in error; strictly speaking, the foredune is the waterward face of the primary dune.

penetrating the primary dune at the 'gap roads' which provide public vehicular access to the beaches. No substantial adverse effects are known to have occurred.

Potential Environmental Impacts Under WAC 173-26

The proposed provisions will standardize local government approaches to regulation of dune modification, where local governments choose to allow dune modification at all, and ensure that dune modification does not adversely affect the ecological functions of those dune lands.

Dredging and Dredged Material Disposal (230 (3) (f))

Existing WAC 173-16

Provides that shoreline master programs shall minimize damage to ecological values; provide a long-range plan for disposal; allow deposition in-water only for habitat improvement purposes or where land deposition is more detrimental; and discourage dredging for the purpose of obtaining fill material.

Proposed WAC 793-26

Provides that shoreline master programs shall avoid or minimize damage to ecological values; provide that new development should minimize need for new dredging; that all dredging should be done so as to avoid or minimize adverse effects; discourage dredging for the purpose of obtaining fill material, and require a conditional use permit where allowed; disposal into river channel migration zones should be discouraged, and require a conditional use permit where allowed.

Existing Conditions & Impacts Under WAC 173-16

Regulatory Programs

Review and approval of dredging activities or projects in Washington State is managed under policies and guidelines established by a coordinated state - federal consortium designated as the Dredged Material Management Program or DMMP. The DMMP consists of representatives from two state agencies (Ecology and Department of Natural Resources) and two federal agencies (US Army Corps of Engineers and US Environmental Protection Agency).

The policies/guidelines under which the DMMP manages dredging activities are contained in guidance manuals specific to discrete water bodies, e.g. Puget Sound, Grays Harbor & Willapa Bay, and the lower Columbia River. (These manuals are available for viewing on web sites maintained by the Seattle and Portland Corps District offices.) A user manual titled the "Dredged Material Evaluation and Disposal Procedures" manual is also posted on the Seattle District web site and is currently undergoing a revision. Certain issues or problems encountered by DMMP relating to policies or guidelines are often presented at annual review meetings convened for the benefit of interested public and stakeholders. The out come or decision by DMMP pertaining to such issues or problems are contained in the summary document prepared following the annual review meeting, and thereby become

incorporated as new or revised policy and guidance. Both formal and informal coordination of dredging activities is carried out as an integral element of the DMMP.

Puget Sound

Navigation waterways of Puget Sound have played an important role in the region's development and growth. There are 34 public port districts serving the region. Approximately 50 miles of navigation channels, approximately 50 miles of port terminal ship berths, and more than 200 small boat harbors must be periodically dredged to maintain the commercial and recreational services provided by these facilities. Over the period 1975-1985, an estimated 24.8 million cubic yards of sediments were removed from Puget Sound harbors and waterways. (Adapted from US Army Corps of Engineers, 1989.)

Columbia River

The US Army Corps of Engineers (COE) maintains the authorized Federal Navigation Channel in the Columbia River from the mouth of the Columbia River (river mile[24] (RM) – 3), upriver to McNary Dam (RM 292). The operation and maintenance dredging is carried out through a combination of dredging (hopper, pipeline, agitation, and clamshell dredges), hydraulic control works (pile dikes), and navigational range markers. The pile dikes control channel alignment, provide bank protection, reduce erosion, and provide for dredge material disposal areas. The COE currently utilizes and maintains 236 pile dikes along the navigation channel. (Adapted from National Marine Fisheries Service, 1999c.)

Potential Environmental Impacts Under WAC 173-26

The principal regulatory programs affecting dredging and dredged material disposal are other than the Shoreline Management Act and the local shoreline master programs. Still, the proposed new provisions under WAC 173-26 would tend to bring local master programs more in alignment with other state and federal regulatory programs.

Shoreline Uses (WAC 173-26-240)

Agriculture (240 (3) (a))

Existing WAC 173-16

Provides that

> (a) Local governments should encourage the maintenance of a buffer of permanent vegetation between tilled areas and associated water bodies which will retard surface runoff and reduce siltation.
>
> (b) Master programs should establish criteria for the location of confined animal feeding operations, retention and storage ponds for feed lot wastes, and stock piles of manure solids in shorelines of the state so that water areas will not be polluted.

[24] River miles are measured from the mouth of a stream or river, which is mile zero, along the thread of the stream upstream to the headwaters. Negative river miles indicates a projection of the thread of the stream into the receiving waters (in this instance the Pacific Ocean).

(c) Local governments should encourage the use of erosion control measures, such as crop rotation, mulching, strip cropping and contour cultivation in conformance with guidelines and standards established by the Soil Conservation Service, U.S. Department of Agriculture.

Proposed WAC 173-26

Provides that "new shoreline master program provisions should not apply retroactively to existing agricultural uses" and that

> New development, clearing, and grading in support of agricultural uses shall be located and designed to avoid impacts to shoreline environments.
>
> Applicable master programs shall include standards for setbacks, water quality protection, environmental impacts, and vegetation conservation, as described in WAC 173-26-220(5), for new agricultural development, clearing, and grading in shoreline jurisdiction.

Existing Conditions & Impacts Under WAC 173-16

The following description of the status and trends of shoreline riparian habitats affected by agricultural practices is quoted from Knutson & Naef (1997), the whole of which is incorporated by reference into this environmental impact statement:

> Beyond the obvious loss of riparian habitat as a result of direct conversion to agricultural land, the effects of agricultural operations on riparian areas generally consist of an excessive supply of non-point source pollution. Because riparian and aquatic systems are the eventual recipients of sediments, fertilizers, pesticides, and wastes, agricultural activities influence the function of stream and riparian ecosystems.
>
> Soil Erosion and Sedimentation
>
> Sediment is considered a source of non-point pollution and is the most common and easily recognizable impact of agriculture on riparian systems. Erosion from croplands accounts for 40-50% of the sediment in waterways in this country (Terrell and Perfetti 1989). As with other land use practices, careful management of croplands can greatly reduce the amount of erosion and stream sedimentation.

The following description of the status and trends of shoreline riparian habitats affected by grazing practices is quoted from Knutson & Naef (1997), the whole of which is incorporated by reference into this environmental impact statement:

> Overgrazing is one of the most destructive forces in riparian ecosystems (Davis 1982) and is usually the result of inappropriate livestock management (Behnke and Raleigh 1978, Oregon-Washington Interagency Wildlife Council 1979, Platts 1979). Grazing can affect all characteristics of riparian and associated aquatic systems, including vegetative cover, soil stability, bank and channel structure, instream structure, and water quantity and quality. Overgrazing is considered one of the principal factors contributing to the decline of native salmonids in the Pacific Northwest (Behnke and Zarn 1976, Armour et al. 1991).
>
> While the general condition of rangelands in the United States has improved over the last century (Box 1979, Busby 1979), grazed riparian areas are in worse condition. The U.S. Bureau of Land Management estimated that of 217,254 ha (536,835 ac) of riparian habitat, 181,086 ha (447,464 ac) (83%) were in unsatisfactory condition (Almand and Krohn 1979). Riparian areas that have been and continue to be subject to overgrazing are primarily those in the semi-arid and arid regions (Behnke and Raleigh 1978).
>
> The major reason for the continued decline of the quality of riparian habitat is that riparian areas are typically managed in the same way as upland areas, despite the fact that livestock use riparian

areas more than uplands (Platts 1990). Because livestock concentrate in riparian areas, and because riparian areas are more sensitive to overuse, upland management schemes have usually caused significant degradation of riparian habitat even if uplands remain in good condition (Behnke and Raleigh 1978, Debano and Schmidt 1989, Elmore 1989, Platts 1989, Platts 1990).

Potential Environmental Impacts Under WAC 173-26

The adverse environmental effects of new agricultural development will be moderated as will be the operational effects of that newly developed agricultural land.

The adverse impacts associated with existing agricultural activities will continue to occur so long as those existing agricultural activities continue.

Ecology has concluded that the best way to comprehensively address agricultural issues is to defer to the on-going Agriculture, Fish and Water negotiations (also known as Ag/Fish/Water and AFW). The AFW process is self-described (Washington State Conservation Commission , 2000) as:

> Negotiations have begun between the Agriculture community and the state departments of Agriculture, Fish and Wildlife, and Ecology, as well as the Washington State Conservation Commission and staff from the Governor's Office, representatives from federal agencies, local government, interested legislators, environmental groups, and Tribes. This collaborative process called Agriculture, Fish and Water (AFW) is aimed at voluntary compliance.
>
> The AFW process involves negotiating changes to the existing Field Office Technical Guide (FOTG) and the development of guidelines for Irrigation Districts to be used to enhance, restore, and protect habitat for endangered fish and wildlife species, and address state water quality needs. This two-pronged approach has developed into two processes, one involving agricultural interests and the second one concerns Irrigation Districts across the state.
>
> The negotiated agreement must assure the long-term economic viability of agriculture in Washington State.

Aquaculture (240 (3) (b))

Existing WAC 173-16

Provides that while "[a]quaculture is a preferred, water-dependent use," permitting of aquaculture projects should "not significantly interfere with navigation," "impair the aesthetic quality of Washington shorelines," or degrade water quality. Also provides that because "[s]hellfish resources and conditions suitable for aquaculture only occur in limited areas," "[p]roposed developments and activities should be evaluated for impact on productive aquaculture areas," and that "[I]dentified impacts should be mitigated through permit conditions and performance standards."

Proposed WAC 173-26

Provides that while aquaculture is a water-dependent use, permitting of aquaculture projects should "not significantly interfere with navigation," "impair the aesthetic quality of Washington shorelines," degrade water quality, or significantly impair ecological functions.

Part IV, in addition, contains provisions specifically addressing impact to eelgrass and macro-algae, as well as the spread of disease and non-native species.

Existing Conditions & Impacts Under WAC 173-16

The following description is quoted from *Washington State Coastal Zone Management Section 309 Assessment and Strategy, 1997* (Shorelands and Water Resources Program, 1997.)

> Washington's aquaculture industry is dominated by salmon net pen facilities in Puget Sound; oyster growing in Puget Sound, Grays Harbor, and Willapa Bay; and mussel growing in Puget Sound. Ship-based deep-water harvest of Geoduck clams in Puget Sound is treated here even though it is the harvest of a wild crop; many of the management issues are similar to those for aquaculture. The most recent comprehensive review of the Washington State aquaculture industry was published in 1987, and is now out of date. No contemporary, comprehensive information is available.
>
> Washington's legislative policy regarding the fostering and regulation of aquaculture is principally embodied in five acts: the Aquaculture Marketing Act of 1994 (Chapter 15.85 RCW); the Multiple Use Concept in Management and Administration of State-Owned Lands Act of 1971 (Chapter 79.68 RCW); the Aquatic Lands Act of 1984 (Chapter 79.90 RCW); the Shoreline Management Act of 1971 (Chapter 90.58 RCW); and the Water Pollution Control Act (Chapter 90.48 RCW)..
>
> The Aquaculture Marketing Act declares that it be "...the policy of this state to encourage the development and expansion of aquaculture..." and that "...the legislature encourages promotion of aquacultural activities, programs, and development with the same status as other agricultural activities, programs, and development..."
>
> The Multiple Use Concept Act declares that "[t]he department of natural resources shall foster the commercial and recreational use of the aquatic environment for production of food, fiber, income and public enjoyment from state-owned aquatic lands under its jurisdiction and from associated waters, and to this end the department may develop and improve production and harvesting of macro-algae and sealife attached to or growing on aquatic land or contained in aquaculture containers..."
>
> The Aquatic Lands Act is a broad piece of legislation setting policy for the use and management of the state's aquatic lands for, among other uses, aquaculture. The ALA is implemented by the Department of Natural Resources, Aquatic Resources Division.
>
> The Shoreline Management Act is implemented by local government (under state Department of Ecology oversight) through local shoreline master programs. Current Department of Ecology guidance for local master programs is that "[a]reas with high aquacultural use potential should be identified and encouraged for aquacultural use and protected from degradation by other types of land and water uses." The guidance further indicates that consideration should be given to both the positive and adverse impacts of aquacultural development "...on the physical environment, on other existing and approved land and water uses, including navigation, tribal 'usual and accustomed fishing grounds,' public access, and on the aesthetic qualities of the project area." Also, "[p]reference should be given to those forms of aquaculture that involve lesser environmental and visual impacts."
>
> The Water Pollution Control Act regulates aquaculture such as salmon net pen operations through the National Pollutant Discharge Elimination System (NPDES) Waster Discharge Permit system and the Sediment Management Standards.
>
> The principal environmental concerns are [1] water quality, [2] habitat alteration by introduced species, and [3] land use patterns and conflicts.

Water quality remains a problem for commercial shellfish aquaculture throughout the state. Principal causes are diverse, and in different regions might include sewage treatment plant discharges, failing on-site sewage treatment systems, marina and boater wastes, animal or other agricultural wastes, or urban runoff and similar nonpoint discharges. Conversely, there is also concern about pollution caused by aquaculture facilities.

New waste discharge standards (WAC 173-221A-110) were adopted by the Department of Ecology in October 1995. New sediment management standards (Chapter 173-204 WAC) were adopted by the Department of Ecology in January 1996. Both of these standards should result in improvements for shellfish growing habitat.

More intractable is the problem of nonpoint contamination from on-site sewage systems, urban runoff, and boater wastes. In recent years much effort has been devoted to watershed management at the local government level, aided by grants and technical assistance from state agencies. The gains have been few, incremental, and hard won. Still, in some regions of the state a long term trend toward degradation of commercial shellfish beds has been slowed or halted.

Habitat alteration affects primarily oyster culture in Willapa Bay which is increasingly threatened by an infestation of exotic species of Spartina. Spartina infestation has recently spread to Grays Harbor and some embayments of Puget Sound. Please refer to the Wetlands assessment for a comprehensive discussion of Spartina.

Land use conflicts are diverse, complex, and widespread. Land use patterns and density also contribute to the problems of water quality and habitat degradation.

Land use conflicts are easily dismissed as merely aesthetic, but that has not been a useful framework for dealing with the issue. Residential shoreline property owners are typically op-posed to the siting of aquaculture facilities such as mussel rafts or salmon net pens, or the permitting of Geoduck harvest operations, within their viewshed. Noise is also cited as an issue. Aquaculturists are adversely affected by residential stormwater runoff, on-site sewage effluents, and boater wastes. In many ways this is a land use conflict similar to any situation where residential land uses abut resource extraction or agricultural land uses.

Local governments, in evaluating shoreline substantial development permit applications under the Shoreline Management Act tend to lend deference to the wishes of the residential property owners. Local governments must enforce the SMA, but they have no clear mandate under any of the legislation aimed at fostering aquaculture. This remains an unresolved issue for private aquaculturists, and also for the Department of Natural Resources which licenses Geoduck clam harvest.

Potential Environmental Impacts Under WAC 173-26

New aquaculture facilities will, overall, have less of an impact on other species than in the past. Other provisions of the proposed rule, especially those relating directly and indirectly to water quality, will tend to alleviate the adverse effects of shoreline development and activities upon aquaculture. The land use conflicts between residential land uses and aquaculture will remain unaffected.

Boating Facilities (240 (3) (c))

Existing WAC 173-16

“Boating facilities” are termed “marinas” in WAC 173-16, which provides that marina siting and permitting should seek to “reduce damage to fish and shellfish resources and be aesthetically compatible with adjacent areas,” that “[s]hallow-water embayments with

poor flushing action should not be considered for overnight and long-term moorage facilities," that "[s]pecial attention" should be given to operational procedures which minimize accidental fuel spillage, and that state and local health standards should be consulted. Marinas are also regulated under state and local health regulations.

Proposed WAC 173-26

Provides that boating facilities[25] should be located "only at sites with suitable environmental conditions, shoreline configuration, access, and neighboring uses;" should meet "health, safety, and welfare requirements;" should "mitigate visual and ecological impacts," as well as "impacts of associated parking;" should "limit the impacts from boaters living in their vessels (live-aboards);" and "protect the rights of navigation."

Additionally, Part IV requires that new boating facilities should be sited only where significant effects to T&E species can be avoided.

Existing Conditions & Impacts Under WAC 173-16

The adverse environmental effects associated with boating facilities and marinas vary depending on the location, size, density, occupancy, flushing characteristics, and other factors. The adverse primary effects at and near the marina site can include accidental fuel and oil spills; boat maintenance wastes and debris; sloughing of anti-fouling bottom paints; bacterial contamination from human wastes; and marine debris and litter. The following material is quoted from a report on a survey of boat yard and marina operation by Stasch & Lynch (1999):

> **Bilgewater/Fueling**
>
> Bilgewater and fueling were identified early on as significant sources of pollution to our surface waters, particularly oils. During fueling, fuel vents can "burp" fuel overboard. Many boaters use the burp as their clue that the fuel tanks have been filled. If the fuel tanks vent onboard, as is the case with some diesel powered boats, then the boat owner is much more careful since having slippery diesel spilled on deck is clearly undesirable. But when the tanks vent overboard, the urgency is diminished.
>
> **Hazardous Waste**
>
> Hazardous waste management was viewed by the advisory workgroup as an area needing improvement and orphaned wastes identified as a persistent problem facing 25 percent of marinas. Hazardous waste tends to collect in dock boxes and boathouses over time. Without proper facilities for the management of hazardous wastes, the risk of improper disposal increases. …only 13 percent of marinas had facilities for managing hazardous waste…
>
> **Used Oil**
>
> Used oil is a common problem waste of any industrial sector utilizing internal combustion engines. Marinas, particularly large ones, generate a substantial amount of used oil as a result of routine maintenance of their tenant's vessels. Because used oil is very messy, providing recycling opportunities is a good customer service; still only 40 percent of marinas collect used oil.

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[25] Boating facilities are defined to exclude docks serving four or fewer single-family residences (three or fewer in Part IV); such smaller facilities would come under the shoreline modification provisions for piers and docks.

What we do know from the on-site visits is that marinas collect an average of 1,000 gallons of used oil per year. Since 60 percent of the 200 marinas visited do not collect used oil, as much as 120,000 gallons of used oil is not being collected by the marinas. It is not possible to determine with certainty how this oil is being managed, but clearly, if this oil was being managed closer to the point of generation, there would be less risk to the environment.

Sewage

Sewage was probably the most difficult issue during the campaign, because many boaters have strongly held beliefs regarding the true environmental impacts of the discharge of sewage. Many boaters and marina owner/operators feel that the problem of fecal coliform contamination lies with other forms of non-point source pollution, such as failing septic tanks and hobby farms. This may account for the fact that only 40 percent of marinas had a procedure to assure that live-a-boards used the sewage pumpouts on a routine basis. (It is interesting to note that 68 percent of marinas actively managed wastes generated by pets.) In fact, only 58 percent of marina owner/operators at the time of the on-site visits could identify one of two major causes of shellfish bed closures: fecal coliform bacteria and red tide contamination.

Potential Environmental Impacts Under WAC 173-26

No substantial difference in long term, overall environmental effects is anticipated.

Commercial Development (240 (3) (d))

Existing WAC 173-16

Provides that while "…priority should be given to those commercial developments which are particularly dependent on their location and/or use of the shorelines of the state and other development that will provide an opportunity for substantial numbers of the people to enjoy the shorelines of the state," "[n]ew commercial developments on shorelines should be encouraged to locate in those areas where current commercial uses exist."

Proposed WAC 173-26

Provides that

> Master programs shall first give preference to water-dependent commercial uses over nonwater-dependent commercial uses; and second, give preference to water-related and water-enjoyment commercial uses over nonwater-oriented commercial uses.
>
> Master programs should exclude nonwater-oriented commercial uses from locating on the shoreline unless they provide public access and ecological restoration and they meet [certain criteria].

Nonwater-dependent development is should be required to meet certain provisions for protection or restoration of shoreline vegetation.

Existing Conditions & Impacts Under WAC 173-16

Following is a description of the status and trends of shoreline riparian habitats affected by urbanization in general which is quoted from Knutson & Naef (1997), the whole of which is incorporated by reference into this environmental impact statement. For purposes of environmental impact analysis, this description includes factors associated with four shoreline uses under WAC 173-16-240: Commercial Development, Industry, Residential, and Transportation and Parking. Subsequent sections of this environmental impact statement

which address Industry, Residential, and Transportation and Parking will refer back to this section.

People have traditionally settled in riverine floodplains and along the banks of major streams and lakes (Goldstein et al. 1983, Nabhan 1985). Modern urban settlement near water and throughout watersheds usually entails large-scale removal of native vegetation and its replacement with buildings, pavement, roads, and manicured plantings, all consisting primarily of impervious surfaces. Unlike the effects of forestry, the loss of natural vegetation and consequences to riparian and stream habitats in urbanized areas are usually permanent (Booth 1991). The effects of urban and industrial developments generally result in:

- changes in basin hydrology;
- loss of riparian habitat;
- loss of woody debris and other instream structures;
- degradation of stream channels;
- reduction in water quality;
- habitat fragmentation;
- introduction of pets and exotic pests.

The loss of natural vegetation in riparian and upland areas and its replacement with compacted or largely impervious surfaces changes the hydrology of urbanized watersheds. These changes usually result in a loss of fish and wildlife habitat. Overall, hydrologic changes upset the balance of aggradation and degradation processes that are essential in maintaining healthy stream and riparian ecosystems. The most dramatic and well-studied effect is the increase in the maximum discharge associated with floods and storm events; peak flows in urbanized watersheds have been known to increase as much as five-fold over natural conditions (Booth 1991).

In an attempt to be close to the water and to "clean up" areas by replacing them with manicured landscapes, riparian vegetation is often cleared when land is developed. Because riparian habitat supports the greatest number of species compared to other habitats, its protection can provide a significant benefit to fish and wildlife in developed landscapes (Noss 1993).

The loss of riparian vegetation due to urbanization: 1) degrades stream conditions through increased erosion of banks that are no longer armored with roots and debris from natural vegetation, 2) removes a source of logs and organic debris that stabilize streams and provide a source of food and nutrients, 3) increases stream temperatures through shade removal, and 4) reduces the capacity of the riparian area to filter incoming sediments and pollutants (Klein 1979).

Woody debris, especially large logs, are lost in urbanized areas through the removal of their source -- riparian vegetation. Logs are flushed through the systems during high peak flows, and they are lost through deliberate removal. Historically, logs were removed in large rivers to improve navigation associated with urban development (Sedell and Luchessa 1982). After the removal of riparian vegetation, remnant logs eventually degrade or are swept downstream during the frequently occurring flooding events in urban areas (Booth 1991). Large woody debris that is removed is rarely replaced in urban areas.

Fish-bearing rivers and streams that flow through heavily-developed areas rarely resemble their natural form. Stream beds are replaced with drainpipes and culverts, riparian vegetation is removed, and municipal wastes contribute pollutants, sediments, and excessive nutrients to the water. To accommodate the real estate needs and safety of expanding urban populations, streams and rivers are frequently channelized, diked, or piped underground. For example, 73% of Ravenna Creek in King County now runs through a pipe (Wash. Dept. Ecol. 1981). Loss of riparian vegetation, increased flooding, and stream channel manipulation eliminate large woody debris,

> pools and riffles, sinuosity, slow flowing side channels, and other essential structural components of fish habitat in urbanized areas. Destruction or severe degradation of fish and wildlife habitat by urbanization is often complete and irreparable (Canning and Stevens 1989).

Potential Environmental Impacts Under WAC 173-26

New commercial development will be held to a higher standard than in the past regarding adverse effects on shoreline habitat. Redevelopment will be required to provide ecological restoration. The rate of habitat elimination and degradation typical of the past will be diminished, and in areas subject to redevelopment will be reversed to some degree.

Forest Practices (240 (3) (e))

Existing WAC 173-16

Provides for replanting, prevention of debris accumulation, maintenance of scenic qualities, proper design and construction of roads and bridges, protection of public water supply quality, minimization of sedimentation, and maintenance of buffer strips.

Proposed WAC 173-26

Provides that:

> [l]ocal master programs should rely on the Forest Practices Act and rules implementing the Act and the *Forest and Fish Report* as adequate management of commercial forest uses within shoreline jurisdiction. However, local governments shall, where applicable, apply this chapter to Class IV-General forest practices where shorelines are being converted or are expected to be converted to non-forest uses.

To that end, Part III also states:

> [f]orest practice conversions and other class IV general forest practices where there is a likelihood of conversion to non-forest uses shall avoid significant ecological impacts to the shoreline environment and maintain the ecological quality of the watershed hydrologic system. Master programs shall establish provisions to ensure that all such timber removal is consistent with the master program environment designation provisions and the provisions of this chapter. Applicable shoreline master programs should contain provisions to ensure that when forestlands are converted to another use, including a residential use, significant vegetation removal, grading, and development are not allowed, except for low-intensity uses and public access that protect or restore ecological functions.

Part IV, in addition to its typical language referencing T&E species, also restricts vegetation removal to one site-potential tree-height, or shoreline jurisdiction, which ever is less.

Existing Conditions & Impacts Under WAC 173-16

The following description of the status and trends of shoreline riparian habitats affected by forest practices is quoted from Knutson & Naef (1997), the whole of which is incorporated by reference into this environmental impact statement:

> Forest practices, including timber harvest and its associated activities (e.g., road building, precommercial thinning, controlled burning, herbicide and insecticide spraying), temporarily or permanently alter the character of forested landscapes, including riparian habitat. Because riparian areas topographically occur below uplands, they receive water, soil, and organic debris from

upland areas. Forest practices in uplands and in riparian areas are often responsible for delivery of these resources to streams at rates significantly different than natural rates, resulting in changes to structural and functional elements of riparian areas.

Moring et al. (1994) summarized four studies that examined the effects of logging on fish habitat. They reported that bank stability was reduced and solar radiation to the stream increased in areas without intact buffer strips of riparian vegetation. Water temperatures rose above 30 C, dissolved oxygen reached critically low levels, sediment loads increased significantly, and particulate organic matter increased tenfold. They also reported population declines of reticulate sculpins, cutthroat trout, and other salmonids.

Vegetation removal, road construction, and soil disturbance are the chief mechanisms by which forest practices influence riparian areas. These disturbances result in:

- hydrologic (relating to water flow) effects;
- soil destabilization, erosion, and sedimentation;
- stream temperature increases and a more severe microclimate;
- loss of large woody debris;
- fish and wildlife effects;
- cumulative effects.

Potential Environmental Impacts Under WAC 173-26

The reliance on the Forest Practices Act in conjunction with the *Forest and Fish Report*, and restrictions on vegetation removal associated with conversion to non-forestry uses, should result in incrementally lesser adverse environmental effects in riparian areas as a result of forest practices.

Industry (240 (3) (f))

Existing WAC 173-16

"Industry" is termed "ports and water-related industry" in WAC 173-16, which states:

> Ports are centers for water-borne traffic and as such have become gravitational points for industrial/manufacturing firms. Heavy industry may not specifically require a waterfront location, but is attracted to port areas because of the variety of transportation available.

Guidelines provide a priority for: water-dependent industry; safe and appropriate public access and public facilities; encouragement for cooperative use of docking, parking, cargo handling, and storage facilities; consideration of regional and state-wide needs for port facilities; and environmental compatibility.

Proposed WAC 173-26

Provides that

> [r]egional and state-wide needs for water-dependent and water-related industrial facilities should be carefully considered in establishing master program environment designations, use provisions, and space allocations for industrial uses and supporting facilities.

To that end, also provides for minimization of adverse environmental effects; provision of safe, compatible public access; and environmental cleanup and restoration where feasible.

New nonwater-dependent industry shall be allowed only on non-navigable waters. In addition, Part IV specifically provides restrictions on new industrial development that would have significant ecological impacts to T&E species.

Existing Conditions & Impacts Under WAC 173-16

Please refer to "Commercial Development" section above.

Potential Environmental Impacts Under WAC 173-26

New industrial development will be held to a higher standard than in the past regarding adverse effects on shoreline habitat. The rate of habitat elimination and degradation typical of the past will be diminished, and in areas subject to redevelopment will be reversed to some degree.

In-stream Structures (240 (3) (g))

Existing WAC 173-16

WAC 173-16 contains no section which explicitly addresses in-stream structures or dams.

Proposed WAC 173-26

Part III states:

> In-stream structures shall provide for the protection, preservation and restoration of ecosystem-wide processes, ecological functions, and cultural resources, including, but not limited to, fish and fish passage, wildlife and water resources, shoreline critical areas, hydrogeological processes, and natural scenic vistas. The location and planning of in-stream structures shall give due consideration to the full range of public interests watershed functions and processes, and environmental concerns, with special emphasis on protecting and restoring priority habitats and species.

Existing Conditions & Impacts Under WAC 173-16

The following description of the status and trends of shoreline riparian habitats affected by dams is quoted from Knutson & Naef (1997), the whole of which is incorporated by reference into this environmental impact statement:

> An effect of dams is inundation of riparian habitat. The amount of habitat affected depends on the level of water rise and the geomorphic shape of the riparian channel. Steep-sided, forested canyons that are dominated by upland vegetation will lose less functional riparian habitat than broad river floodplains featuring extensive deciduous stands, gravel bars, and side channels. Water impoundment by dams has a way of "smoothing out" riparian features and irregularities that are important to the diversity of fish and wildlife (Sauve 1977).
>
> The following are ways in which dams can affect riparian and aquatic habitats (Johnson et al. 1977, Sauve 1977, Hildebrand and Goss 1981, Turbak et al. 1981, Strahan 1984, Brown and Johnson 1985, Carson and Peek 1987, Junk et al. 1989, Columbia Basin Fish and Wildlife Authority 1991, Hunter 1992, McComas et al. 1994).
>
> **Riparian Habitat**
>
> - continual rise and fall in water levels creates a zone of unnatural disturbance at the aquatic/riparian interface that usually cannot support the original vegetation;

- changes in the plant species occupying the relocated riparian zone, with reductions in maturity and structural diversity of plant communities;
- loss of level streamside habitat as banks become steeper;
- loss of snow-free wintering habitat for deer, elk, and other species due to a net increase in riparian zone elevation.

Instream Structure

- sharply reduced recruitment of LWD and gravel downstream from the dam;
- decreased stability of bank and bed;
- altered sedimentation patterns.

Water Quality

- changes in nutrient transport and cycling;
- gas supersaturation;
- loss of water quality from dredging;
- wide fluctuations in stream and reservoir water temperatures;
- colder stream temperatures downstream from the dam;
- increased water surface area above the dam, resulting in less shading by bank-side vegetation and increased absorption of heat-producing solar radiation, thereby increasing the water temperature;
- reduced levels of dissolved oxygen concentrations downstream from reservoirs;
- elimination of flood pulses that bring nutrients from the floodplain into the river system.

Water Quantity

- wide fluctuations in water levels above and below the dam causing the stranding of fish and alternating desiccation and inundation of fish and wildlife breeding habitat;
- changes in the timing of high flows and water velocity from natural conditions, negatively affecting salmon migration and survivability.

Fish Habitat

- changes in fish numbers, species composition, and distribution;
- inundation of feeder streams, with loss of spawning habitat;
- loss of spawning and rearing habitat;
- blocked or impeded upstream and downstream fish passage;
- stranded juvenile fish and dewatered redds during flow fluctuations;
- turbine mortality.

An indirect effect of dams is the encouragement of agricultural, commercial, residential, and recreational development in previously undeveloped areas, particularly adjacent to water bodies. Roads are often built into relatively remote areas to construct and service the dams, and also to accommodate human developments that are created adjacent to the reservoirs created by the dams. In the Columbia Basin, extensive conversion of shrub-steppe riparian habitat into agricultural lands has occurred as a result of new irrigation capability afforded by water impoundment behind dams. These shrub-steppe riparian habitats formerly supported a great variety of wildlife species and provided critical mule-deer fawning grounds (Tabor 1976, Carson and Peek 1987).

> Dams are major projects that are obligated to undergo full environmental and public review, as provided through the State Environmental Protection Act/National Environmental Protection Act, Federal Energy Regulatory Commission, and Fish and Wildlife Coordination Act. Mitigation and management prescriptions are thoroughly covered during these processes; therefore, management recommendations concerning dams would be redundant in this document and are not given. However, an understanding of the impacts of dams is important in assessing the quality and availability of fish and wildlife habitat on a regional basis. Also see Hunter (1992) for further information regarding dams and salmonids.

Potential Environmental Impacts Under WAC 173-26

In addition to requiring that new in-stream structure projects protect ecological processes and functions, the proposed measures will provide the coordination between local shoreline master programs and established regulatory programs which is now lacking. This, in turn, should effect a lower rate of habitat loss and degradation and other forms of environmental degradation discussed above.

Mining (240 (3) (h))

Existing WAC 173-16

Provides that when mining is conducted, "adequate protection against sediment and silt production should be provided;" it "should be done in conformance with the Washington State Surface Mining Act;" and "the removal of sand and gravel from marine beaches" should be "strictly control[ed] or prohibit[ed]."

Proposed WAC 173-26

Under Part III, local master programs will be required to include measures which assure:

> (i) Mining and associated activities are not allowed where such uses would result in short-term or long-term significant ecological impacts to shoreline ecological functions or ecosystem-wide processes.
>
> (ii) Where mining and associated activities are allowed, they must be conducted in a manner that is consistent with the policies of the environment designation in which they are located, impacts to fish and wildlife habitat shall be avoided, and all disturbed areas must be restored upon completion of mining. Destruction of critical habitat for priority species is prohibited.
>
> (iii) Surface mining shall be conducted in conformance with the Washington State Surface Mining Reclamation Act, chapter 78.44 RCW.
>
> (iv) Surface mine reclamation plans shall provide for subsequent use of the property that is consistent with the policies of the environment designation in which they are located and shall assure that ecological functions of the shoreline are restored.
>
> (v) Removal of sand and gravel resources from a location waterward of the ordinary high-water mark of a river shall be prohibited unless [certain requirements are met].

Part IV is similar, adding specific reference to T&E species.

Existing Conditions

The following description of the status and trends of shoreline riparian habitats affected by gravel extraction is quoted from National Marine Fisheries Service (1996b), the whole of which is incorporated by reference into this environmental impact statement:

> Extraction of alluvial material from within or near a stream bed has a direct impact on the stream's physical habitat parameters such as channel geometry, bed elevation, substrate composition and stability, instream roughness elements (large woody debris, boulders, etc.) depth, velocity, turbidity, sediment transport, stream discharge and temperature (Rundquist 1980; Pauley et al. 1989; Kondolf 1994a, b; OWRRI 1995). OWRRI, (1995) states that:
>
> Channel hydraulics, sediment transport, and morphology are directly affected by human activities such as gravel mining and bank erosion control. The immediate and direct effects are to reshape the boundary, either by removing or adding materials. The subsequent effects are to alter the flow hydraulics when water levels rise and inundate the altered features. This can lead to shifts in flow patterns and patterns of sediment transport. Local effects also lead to upstream and downstream effects.
>
> Altering these habitat parameters has deleterious impacts on instream biota and the associated riparian habitat (Sandecki, 1989). For example, impacts to anadromous fish populations due to gravel extraction include: reduced fish populations in the disturbed area, replacement of one species by another, replacement of one age group by another, or a shift in the species and age distributions (Moulton, 1980). In general terms, Rivier and Seguier (1985) suggest that the detrimental effects to biota resulting from bed material mining are caused by two main processes: (1) alteration of the flow patterns resulting from modification of the river bed, and (2) an excess of suspended sediment. OWRRI (1995) adds:
>
> Disturbance activities can disrupt the ecological continuum in many ways. Local channel changes can propagate upstream or downstream and can trigger lateral changes as well. Alterations of the riparian zone can allow changes in-channel [sic] conditions that can impact aquatic ecosystems as much as some in-channel [sic] activities.
>
> One consequence of the interconnectedness of channels and riparian systems is that potential disruptions of the riparian zone must be evaluated when channel activities are being evaluated. For example, aggregate mining involves the channel and boundary but requires land access and material storage that could adversely affect riparian zones; bank protection works are likely to influence riparian systems beyond the immediate work area.

Potential Environmental Impacts Under WAC 173-26

The provisions of this mining section, in conjunction with provisions regarding vegetation conservation, will effect a lower rate of habitat loss and degradation and other forms of environmental degradation discussed above.

Recreational Development (240 (3) (i))

Existing WAC 173-16

“Recreational development” is termed “recreation” in WAC 173-16, which encourages a broad variety of recreational features and facilities, linked by transportation corridors (hiking, biking, and vehicular); health and environmental effects should be addressed in siting and design.

Proposed WAC 173-26

Provides that master programs should ensure a broad variety of recreational features and facilities, linked by hiking and biking corridors; adverse effects to health and environmental quality should be mitigated; preference should be given to water-dependent recreation; and where applicable, master program provisions should be consistent with GMA-mandated growth projections.

Part IV additionally requires that non-water dependent recreational uses, such as beach driving, shall be restricted where necessary to protect T&E species.

Existing Conditions & Impacts Under WAC 173-16

The following description of the status and trends of shoreline riparian habitats affected by recreational development and activities is quoted from Knutson & Naef (1997), the whole of which is incorporated by reference into this environmental impact statement:

> Recreation is an important cultural activity that may take place within riparian areas. Recreational use of the riparian zone is many times that of other habitats, particularly in suburban and urban areas (North Central Forest Experiment Station 1977, Sachet 1988). In Oregon, up to 80% of the Willamette National Forest's dispersed recreation occurs in riparian areas (Gregory and Ashkenas 1990).
>
> Vegetation alteration at recreation sites occurs as a result of trampling, firewood gathering, off-road-vehicle (ORV) use, dispersed camp sites, landscaping, and the construction of roads, launches, and other structures. Herbaceous and shrub layers are usually most affected (Settergren 1977, Reese and Blakesley 1987). These layers are particularly important to nesting songbirds, amphibians, small mammals, and other species that require thick and multi-layered vegetation for protective cover, food gathering, and microclimate control (Weaver et al. 1979, Bull and Skovlin 1982, Doyle 1990). Shrub-oriented species such as Macgillivray's warbler and lazuli bunting may be fewer in number or absent at recreational sites. But species that nest and feed within tree canopies, such as Douglas squirrel and warbling vireo, may be unaffected by recreational development because mature trees are often spared at recreation sites (Reese and Blakesley 1987).
>
> Although information found in a literature review provided by Sachet (1988) was not specific to riparian areas, it does provide some insight to potential impacts in riparian areas as a consequence of ORV, pedestrian, and equestrian recreation in back country areas. General conclusions of wildlife habitat impacts by those forms of recreation have been summarized by Sachet (1988).
>
> ***Indirect Effects***
>
> - increased bare ground, trail width, trail depth, soil compaction, and soil bulk density;
> - increased potential for soil erosion;
> - reduced trailside vegetation, vegetative cover, and organic matter in the soil;
> - tree damage.
>
> ***Direct Effects***
>
> - disruption of normal activity patterns and habitat selection of big game because of ORV activity;
> - human disturbance of all wildlife.

Potential Environmental Impacts Under WAC 173-26

The clear requirement for mitigation of adverse effects of recreational developments, and the requirement that non-water-dependent recreational uses be restricted or set back from the shoreline should reduce the rate of habitat loss and degradation to recreational development and activity.

Residential Development (240 (3) (j))

Existing WAC 173-16

Provides that subdivision development should: be designed for the physical and environmental capabilities of the site; provide pedestrian shoreline access; preserve shoreline vegetation and control erosion; and use public water supplies in preference to on-site groundwater. Over-water residential construction should not be allowed.

Proposed WAC 173-26

Part III provides that:

> Master programs should include shoreline setbacks, density regulations, bulkhead restrictions, vegetation conservation requirements, and, where applicable, on-site sewage system standards for residential uses and development, including single-family residences and appurtenant structures and uses, in accordance with the provisions of this chapter. … New residential development, including appurtenant structures and uses, shall be sufficiently set back from steep slopes and shorelines vulnerable to erosion so that structural improvements, including bluff walls and other stabilization structures, are not required to protect property. … New over-water residences, including floating homes, are not a preferred use and shall be prohibited. … New multiunit residential development, including duplexes, fourplexes, and the subdivision of land for more than four parcels, should provide community and/or public access in conformance to the local government's public access planning and this chapter. … Local governments should not allow residential development of a scale and location that will cause significant ecological impacts to the ecological functions performed by vegetation. Limit significant vegetation removal to the minimum necessary to accommodate permitted primary residential structures. Where the dimensions of existing legally created lots are not sufficient to accommodate development of a permitted use without significant vegetation removal, apply the mitigation sequence defined in WAC 173-26-020 to address adverse impacts to vegetation. … Master programs shall include standards for the creation of new residential lots, through land division or conversion from another use, that … prevent significant vegetation removal … or significant ecological impact to ecological functions. [and] … prevent the need for new shoreline stabilization measures that would cause significant ecological impacts to ecological functions.

Part IV is similar, but adds additional specific standards, including standards to protect priority species from adverse effects of new piers and docks, and to protect T&E species from development within the channel migrations zone.

Existing Conditions & Impacts Under WAC 173-16

Please refer to “Commercial Development” section above.

Potential Environmental Impacts Under WAC 173-26

New residential development, including land subdivision, will be held to a higher standard than in the past regarding adverse effects on shoreline habitat. Newly created lots or parcels should be required to be of sufficient size and configuration to cause no significant adverse impacts to ecological functions. The rate of habitat elimination and degradation typical of the past will be diminished.

Transportation and Parking (240 (3) (k))

Existing WAC 173-16

"Transportation and Parking" provisions are found in the "road and railroad design and construction" section of WAC 173-16, which provides that transportation corridors should be "located away from shorelands" except as necessary for port facilities; roadways should be sited, designed and constructed so as to minimize adverse environmental effects; that "loops or spurs of old highways with high aesthetic quality should be kept in service as pleasure bypass routes;" and land use and transportation plans should be coordinated.

Proposed WAC 173-26

Part III provides for:

> …master program policies and regulations to provide safe, reasonable, and adequate circulation systems to shorelines… consistent with the master program public access policies, public access plan, and environmental protection provisions…[and]… shall include systems for pedestrian, bicycle, and public transportation where appropriate…[that]… parking facilities in shorelines are not a preferred use and shall be allowed only as necessary to support a preferred use…[and that]… plan, locate, and design proposed transportation and parking facilities where routes will have the least possible adverse effect on unique or fragile shoreline features and existing ecological functions or on existing or future water-dependent uses…

Part IV is substantially the same, but adds specific provisions regarding restoration in areas affecting T&E species.

Existing Conditions & Impacts Under WAC 173-16

Please refer to "Commercial Development" section above.

Potential Environmental Impacts Under WAC 173-26

New transportation and parking facilities will be held to a higher standard than in the past regarding adverse effects on shoreline habitat. The rate of habitat elimination and degradation typical of the past will be diminished.

Utilities (240 (3) (l))

Existing WAC 173-16

Provides for restoration of utility corridors upon completion of construction; underground placement where ever feasible; and integration with public access corridors.

Proposed WAC 173-26

Part III provides that:

> All utility facilities shall be designed and located to minimize harm to shoreline functions, preserve the natural landscape, and minimize conflicts with present and planned land and shoreline uses… nonwater-oriented [facilities] shall not be allowed in shoreline areas unless it can be demonstrated that no other feasible option is available…transmission facilities…shall be located to cause minimum harm to the shoreline, [and] shall be located outside of the shoreline area where feasible…[and] development of pipelines and cables on tidelands … should be discouraged except where no other feasible alternative exists.

Part IV is substantially the same, but adds specific provisions regarding restoration for new non-water-dependant facilities where they affect &E species.

Existing Conditions & Impacts Under WAC 173-16

The placement of utilities typically results in the clearing of the utility corridor and a moderate amount of grading (cutting and filling). Underground utilities require trenching and backfilling. Many utility corridors are easements which run across rangelands, farmlands, or timberlands, and the long term effects are those associated with the fundamental land use.

Potential Environmental Impacts Under WAC 173-26

The proposed rule establishes higher standards for siting utility corridors, which should result in lesser adverse effects from newly established corridors.

7 Integrated Analysis

Chapters 5 and 6 have addressed the status and trends under WAC 173-16 and the likely future effects of WAC 173-26 regarding specific aspects of the environment, based on the subdivisions of WAC 173-26. This chapter provides a brief, integrated analysis of those anticipated specific environmental effects.

WAC 173-16

Chapters 5 and 6 have characterized the status and trends for Washington's shorelines as they have developed under WAC 173-16, as experiencing varying degrees of degradation.

Riparian habitats have been altered or degraded by forestry and agricultural practices, and clearing for various urban and suburban lands uses. Stream channel hydrology and ecology has been altered for the worse and degraded. Wetlands loss continues, possibly at undiminished rates[26]. Estuarine water quality is variable, and in places is substandard. Overall more commercial shellfish beds are being downgraded than are being upgraded due to ongoing pollution problems. As more and more people build larger and larger houses on and near unstable slopes the problems associated with landsliding become greater. Nearly two miles of Puget Sound shorelines are armored each year, adversely affecting beach and nearshore habitats, and the creatures which depend on those habitats for all or a portion of their life cycle.

What goes unsaid, however, is what Washington's shorelines would have become without the Shoreline Management Act (and other resource management and environmental protection legislation). Two examples of activities ended or moderated by the passage of the Shoreline Management Act and adoption of WAC 173-16 are over-water structures (as exemplified by multi-family residential construction in Seattle) and beach fills (as exemplified by residential beach filling on the shores of Hood Canal).

WAC 173-26

It is important to realize that WAC 173-26 is not a panacea. Development will continue to occur on Washington's shorelines, and therefore habitat loss and degradation will continue to occur. The rate of development is driven largely by the state of the economy — a robust economy tends to result in more development, and more expansive development projects. The conditions in the Puget Sound region of Washington during the past decade, and past few years in particular, bear out this statement of the obvious.

The rate of habitat loss and degradation is moderated by land use, environmental, and pollution control laws and regulations. The Shoreline Management Act functions in conjunction with a number of other state laws, the most important of which to this environmental impact statement are identified in Chapter 6

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[26] Some wetlands scientists are of the opinion that in certain respects wetlands loss rates have slowed, but that wetlands degradation continues unabated. Sufficient monitoring data is not available to make an unequivocal statement.

From reading the individual impact analyses of Chapter 6 one could gain the impression that WAC 173-26 will be only marginally effective in reducing the rate of habitat loss and degradation, and other undesirable environmental consequences of shoreline development and activities. The integrated effect of WAC 173-26 as a whole, however, is anticipated to have a synergistic effect, producing overall environmental benefits substantially greater than the sum of the parts.

To the extent that WAC 173-26 is more effective than is WAC 173-16 at moderating environmental impacts — and everything else being equal — future adverse effects on the shoreline environment at specific project sites will be less, likely substantially less. To the extent that WAC 173-26 is better integrated and coordinated with other land use, environmental, and pollution control laws and regulations than is WAC 173-16 (as it is), future adverse effects on the environment at specific project sites will be less.

WAC 173-26 contains a number of concepts wholly or explicitly lacking in WAC 173-16:

- ecological restoration of development sites undergoing re-development;
- vegetation conservation for the protection of shoreline habitats;
- explicit management of geologically hazardous areas, and to do so in concert with requirements of the Growth Management Act;
- explicit management of critical salt water habitats, and to do so in conjunction with shoreline management of adjacent areas;
- explicit management of riverine corridors, and to do so in especially in conjunction with protection of hydrologic and ecologic values; and
- explicit management for flood hazard reduction.

Two provisions of WAC 173-26 stand out in this respect.

The various requirements for ecological restoration of already-developed sites undergoing redevelopment will lead to real improvements in environmental conditions at discrete locations. With a robust economy, and a sufficient amount of redevelopment in proximity, real environmental gains are likely.

The requirements for vegetation conservation which apply more-or-less across-the-board to most shoreline developments will, more than any other provision in WAC 173-26, result in substantially lower rates of habitat loss and degradation from new development than any other element of the proposed rule.

Additionally, Part IV of WAC 173-26 introduces a number of concepts wholly or explicitly lacking in WAC 173-16 which apply only to jurisdictions choosing to adopt Part IV as the pathway for amending their local shoreline master program:

- explicit management for threatened and endangered (T&E) species; and
- explicit management for properly functioning conditions (PFC) for T&E species.

8 • Draft EIS Commentators and Comments, and Responses to Comments

Few persons or organizations submitted comments directly on the Modified Draft Environmental Impact Statement (MDEIS) in a letter or other communication explicitly addressing MDEIS comments. Most comments on the MDEIS were contained within comments on the rule amendment itself, or in attachments to comments on the rule amendment. We have made a diligent attempt to find all such comments on the MDEIS, but Ecology cannot be responsible for improperly submitted comments.

Commentators on Modified Draft EIS

This list of commentators on the Modified Draft EIS for the Proposed Shoreline Master Program Guidelines Rule Amendment is organized according to the serial number applied to the comment letter. An alphabetical list is provided following this serial-numbered listing. The specific comments of many commentators address the same issue, therefore those comments and Ecology's responses are combined (WAC 197-11-560 (3)). The numbers in the last line of each entry indicate the Comment Issues addressed by that commentator.

Commentators Serial List

No. Commentator
Comment Issue codes

28 **Upper Columbia Resource Council**
PO Box 478
Curlew, WA 99118
by: Diana W.H. Capp, Chair
1, 2, 3, 29

33 **Grays Harbor County Public Services Department**
100 West Broadway, Suite 31
Montesano, WA 98537
by: Michael F Daniels, Director
2, 22

718 **Port of Grays Harbor**
P O Box 660
111 South Wooding
Aberdeen, WA 98520
by: Sheli Hopsecger, Public Affairs Director
2

814 Richard Graham and

815 Dennis Hadaller and

816 Russ Wigley
Lewis County Commissioners
360 NW North Street
Chehalis, WA 98532
2

817 **Kittitas County Planning Department**
411 N. Ruby, Suite 2
Ellensburg, WA 98926
by: David Taylor
3

907 **Keesling, Maxine**
15241 NE 153 Street
Woodinville, WA 98072
2, 9

1046 **Columbia-Pacific Resource Conservation & Development**
303 South I, Suite 102
Aberdeen, WA 98520-6615
by: Max Stocks, President
2, 4

1263 **City of Westport**
PO Box 505
Westport, WA 98595
by: Berkley E. Barker, Mayor
2, 22

1266 **Muckleshoot Indian Tribe**
Fisheries Department
39015 – 172nd Avenue SE
Auburn, WA 98092
by: Karen Walter, Senior Watershed Planner
16, 17, 18, 22, 27

1269 **Carol Ehlers**
3998 Wind Crest Lane
Anacortes, WA 98221
14

1274 **Association of Washington Business**
PO Box 658
Olympia, WA 98507-0658
Grant Nelson, Regulatory Coordinator
5, 6, 7, 8, 9

1275 **Puget Sound Energy**
3130 S 38th Street
Tacoma, WA 98409-5615

by: Andy Markos, Municipal Land Planner
9

1280 Nancy Thomas
3024 N 25th
Tacoma, WA 98406
12, 13

1296 Sierra Club
Cascade Chapter
8511 15th Avenue, Suite 201
Seattle, WA 98115
by: Steve Gerritson
19, 20

1307 Mentor Law Group, LLC
1505 Westlake Ave N, Suite 300
Seattle, WA 98109
by: Bill Clark
for: Washington Association of Realtors
5, 6, 7, 9, 21, 22

1309 Donald C. Hruska
44D Riverview Road
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15

1326 Grays Harbor Council of Governments
2109 Sumner Avenue, Suite 201
Aberdeen, WA 98520
2, 22

1374 Pope Resources
PO Box 1780
Poulsbo, WA 98370-0239
by: Roberta A. Ferris, Vice President
7

1375 Williams, Kastner & Gibbs, PLLC
Two Union Square
601 Union Street, Suite 4100
Seattle, WA 98111
by: Dennis Reynolds
for: Washington Aggregates and Concrete Association
5, 6, 7, 8, 9

1382 Washington State Farm Bureau
PO Box 2009
Olympia, WA 98507

by: Hertha Lund, Asst Director, Government Relations
5, 6, 7, 9, 21

1394 **Northwest Indian Fisheries Commission**
6730 Martin Way E
Olympia, WA 98516-5540
25, 26

1397 **Building Industry Association of Washington**
PO Box 1909
Olympia, WA 98507
by: Jodi C. Slavik, Legal Counsel
5, 6, 9, 21

1401 Bryan Harrison

1402 David J. Burke
Pacific County Department of General Administration
PO Box 6
South Bend, WA 98586
2, 3, 7, 22, 23, 24

1403 **Protect the Peninsula's Future**
P.O. Box 1677
Sequim, WA 98382-1677
by: Betty Joyce Enbysk, Research Associate
10

1408 **Board of Lincoln County Commissioners**
450 Logan Street
Davenport, WA 99122
by: Resolution 00-62
2, 11, 30

Commentators Alphabetical List

Association of Washington Business – 1274

Building Industry Association of Washington - 1397

Columbia-Pacific Resource Conservation & Development – 1046

Ehlers, Carol – 1269

Grays Harbor Council of Governments - 1326

Grays Harbor County Public Services Department – 33

Hruska, Donald C. – 1309

Keesling , Maxine - 907

Kittitas County Planning Department - 817

Lewis County Commissioners – 814, 815, 816

Lincoln County Commissioners, Board of – 1408

Mentor Law Group, LLC - 1307

Muckleshoot Indian Tribe – 1266

Northwest Indian Fisheries Commission - 1394

Pacific County Department of General Administration – 1401, 1402

Pope Resources - 1374

Port of Grays Harbor – 718

Protect the Peninsula's Future - 1403

Puget Sound Energy – 1275

Sierra Club, Cascade Chapter - 1296

Thomas, Nancy - 1280

Upper Columbia Resource Council – 28

Washington Aggregates and Concrete Association – see Williams, Kastner & Gibbs

Washington Association of Realtors – see Mentor Law Group, LLC

Washington State Farm Bureau - 1382

Westport, City of - 1263

Williams, Kastner & Gibbs, PLLC - 1375

Comments on Modified Draft EIS and Responses

This list of comments on the Modified Draft EIS for the Proposed Shoreline Master Program Guidelines Rule Amendment is organized according to the code number applied to the Comment Issues. Many commentators made the same or a similar comment; these similar issues have been combined for this response to comments. For each comment, the comment itself, or the general comment topic, has been bolded to make it easier to read this section. The bold face type has no other meaning. The numbers in parentheses at the end of each comment Issue statement indicate the commentator(s) who raised the issue.

1 The comment period for the Modified Draft EIS should be extended because the Evaluation of Probable Benefits and Costs report being prepared on the proposed action, and incorporated by reference into the MDEIS at page 8, was not issued in a timely manner. (28)

Response: The *Evaluation of Probably Benefits and Costs* report was not incorporated by reference into the MDEIS. The MDEIS, at page 8, states: "This environmental impact statement does not address fiscal, economic, or other non-environmental issues. As required by the Administrative Procedures Act at RCW 34.05.328(1)(c), a separate *Evaluation of Probable Benefits and Probable Costs* is being prepared." There is no indication here that this document was incorpo-

rated by reference. At page v the MDEIS states: "Incorporations by reference are identified in Chapter 8, References Cited and Consulted." Chapter 8 contains no reference the *Evaluation of Probable Benefits and Costs* report. Ecology therefore proposes to take no action on this comment and request. (See also Comment 7 and Response.)

2 The Modified Draft EIS is inadequate in that it fails to address fiscal, economic, socio-economic, and/or social impacts. (28, 33, 718, 814, 815, 816, 907, 1046, 1263, 1326, 1408)

Response: The "elements of the environment" required to be addressed under SEPA, and listed at WAC 197-11-444, contain no reference to economic, socio-economic, or social impacts, or any similar topic. Ecology therefore disagrees that the MDEIS is inadequate in this respect because these topics are not an element of the environment as defined by SEPA's implementing regulations.

Furthermore, WAC 197-11-448 which addresses the "relationship of [an] EIS to other considerations" states as follows:

> (1) SEPA contemplates that the general welfare, social, economic, and other requirements and essential considerations of state policy will be taken into account in weighing and balancing alternatives and in making final decisions. However, the environmental impact statement is not required to evaluate and document all of the possible effects and considerations of a decision or to contain the balancing judgments that must ultimately be made by the decision makers. Rather, an environmental impact statement analyzes environmental impacts and must be used by agency decision makers, along with other relevant considerations or documents, in making final decisions on a proposal. The EIS provides a basis upon which the responsible agency and officials can make the balancing judgment mandated by SEPA, because it provides information on the environmental costs and impacts. SEPA does not require that an EIS be an agency's only decision making document.
>
> (2) The term "socioeconomic" is not used in the statute or in these rules because the term does not have a uniform meaning and has caused a great deal of uncertainty. Areas of urban environmental concern which must be considered are specified in RCW 43.21C.110 (1)(f), the environmental checklist (WAC 197-11-960) and 197-11-440 and 197-11-444.
>
> (3) Examples of information that are not required to be discussed in an EIS are: Methods of financing proposals, economic competition, profits and personal income and wages, and social policy analysis (such as fiscal and welfare policies and non construction aspects of education and communications). EISs may include whether housing is low, middle, or high income.

Ecology therefore rejects this assertion of inadequacy.

3 A federal (NEPA) environmental impact statement should have been prepared. "Pursuant to WAC 197-11-924, WAC 197-11-926, and the "Environmental Performance Partnership Agreement Between the Washington Department of Ecology and the United States Environmental Protection Agency", the lead agency [for environmental analysis] for this proposal is the US Environmental Protection Agency, not the Department of Ecology." Various other comments on the Draft EIS simply questioned why a NEPA

(National Environmental Policy Act) EIS had not been completed, and/or asked why not.(28, 817, 1401, 1402)

Response: WAC 197-11-926, "Lead agency for governmental proposals" states: "(1) When an agency initiates a proposal, it is the lead agency for that proposal. If two or more agencies share in the implementation of a proposal, the agencies shall by agreement determine which agency will be the lead agency. For the purposes of this section, a proposal by an agency does not include proposals to license private activity."

The Washington Department of Ecology initiated the proposal, and will be the sole implementing agency at the state government level. The Washington Department of Ecology is therefore the proper lead agency.

Regarding the "Environmental Performance Partnership Agreement Between the Washington Department of Ecology and the United States Environmental Protection Agency", that is simply a work plan agreement as to how the Department of Ecology will carry our EPA-funded projects. It does not establish the US EPA as the lead agency for projects carried out by Ecology. Furthermore, the Shoreline Management Act is not mentioned in the current Performance Partnership agreement. There is no foundation for an argument that the US EPA is the proper lead agency.

Finally, a NEPA EIS is neither necessary or appropriate. The proposed rule amendment is a state action, not a federal action. No federal approval or license is needed to adopt the proposed rule amendment. Arguments that a NEPA EIS should have been prepared have no foundation.

Ecology therefore rejects this assertion that a federal environmental impact statement should have been prepared.

4 **"In reviewing the literature review sited [*sic*] with the EIS, there is little sited [*sic*] on impacts of agriculture and pasture land. There also appears to be a preponderance of agency sitings [*sic*]. We would recommend an independent literature review and findings be prepared for these regulations. The largest sitings [*sic*] are the Washington Department of Ecology, proposers of the regulations. Then we need analysis of other options and their effectiveness in accomplishing stated goals." (1046)**

Response: The "impacts of agriculture and pasture land" are addressed in the MDEIS at page 35 and 74-75. Much of this material was quoted directly from a report which comprehensively reviewed the literature on the status of Washington's riparian habitats; the MDEIS included quotations of all the citations to the literature provided in the original report. Ecology acknowledges that many of the citations are of government agency (including Department of Ecology) documents; however, these documents are based (to varying degrees) on reviews of the scientific and technical literature. Ecology does not agree with the implication that government agency documents are somehow suspect or dishonest. See also Comment 25.

5 "The DEIS suggests that DOE considers use of existing laws for compliance with the ESA and recovery of ESA-listed species are part of the purpose of and need for the proposed SMA guidelines. This statement of purpose and need is based on the legally incorrect premise that the SMA must be implemented in a manner that ensures that regulated activities comply with the ESA and that ESA compliance may be equated with species recovery. If ESA compliance for regulated constituents was part of the purpose and need for the rules, DOE's scoping notices and rule preproposal should have established a process for the affected public to help define whether such an objective was needed, under what circumstances, and how best to attain such a purpose and need." (1274, 1307, 1375, 1382, 1397)

Response: In addressing ESA-response in this proposed rule amendment, Ecology is responding to findings, recommendations, and comments of others, which were issued are various times during the latter years of the 5-year process to develop this rule amendment. As the comment notes, the "Need" section of the MDEIS (pg 12-13) cites a 1999 report issued by Shoreline Guidelines Commission to the Department of Ecology (which was commissioned by the Governor), and a 2000 report commissioned by the Tri-County ESA Response Effort. Neither of these reports were authored by the Department of Ecology. Additionally, at page 19-20, the MDEIS relates how, during the public review and comment process for the previous (April 1999) version of this proposed rule amendment, Ecology received comments from some local governments regarding compliance with the ESA, and how in response the "dual path" approach evolved.

Ecology's position, therefore, is that the dual path nature and structure of the proposed rule amendment is the result of a public process and a response to expressed concerns regarding ESA compliance. The primary goal of this rule is to comply with the SMA. Since the SMA covers many of the same issues as the ESA (as that law relates to areas in Washington under SMA jurisdiction), an alternative (Part IV) is presented to local governments to also meet the requirements of the ESA. Local governments may also choose to meet their ESA requirements in some other way.

6 The Modified Draft EIS does not consider alternative means for a local Shoreline Master Program to comply with the Endangered Species Act. (1274, 1375, 1382, 1397)

Response: The MDEIS does "consider alternative means for a local shoreline master program to comply with the Endangered Species Act." Please refer to the discussion head-lined "Two Path Rule: Structure & Effect" at pages 20-21 in the MDEIS where Part III and Part IV (Path A and Path B) are both considered to be a 'vehicle' whereby a local government can comply with the Endangered Species Act while they are preparing their SMP amendment which complies with the Shoreline Management Act. Part IV is simply more definitive or explicit than is Part III.

7 The Modified Draft EIS was not issued in a timely manner; it should have been released prior to the public hearings. The comment period should therefore be extended. (1274, 1307, 1374, 1375, 1382)

Response: The MDEIS was issued on June 28, 2000. Public hearings were held during the period June 27 through July 12, 2000. The deadline for comments was August 7, 2000, providing a 44-day commentary period, 14 more than the standard 30-day commentary period required by SEPA. Ecology considers the 44-day commentary period to have been sufficient.

8 The Modified Draft EIS overlooks the potential adverse impacts to the environment if the SMA Guidelines interfere with growth management efforts. (1274, 1375)

Response: It is not clear from the comment what those "potential adverse impacts to the environment if the SMA Guidelines interfere with growth management efforts" might be. Ecology maintains that the proposed Guidelines Rule is not inherently contradictory to or with the Growth Management Act, therefore there are no potential adverse impacts which can reasonably be expected on this account.

9 The Modified Draft EIS does not address potential adverse effects of the Guidelines rule amendment on aspects of the built environment. Different commentators gave as examples the transportation network, public transportation, utilities, and "other capital projects". (907, 1274, 1275, 1307, 1375, 1382, 1397)

Response: Ecology concluded that the rule does not have significant adverse effects on the built environment, and did not intend to analyze that in the DEIS. This was announced in the scoping notice, and Ecology received no comments to the contrary during scoping. That the proposed rule will have an effect on the built environment by holding such development to a higher standard was (and is) acknowledged in Chapter 6, at sections Commercial Development; Industry; Residential Development; Transportation and Parking; and Utilities.

Building and development can still occur, as it has since the passage of the act. However, the rule will likely change the pattern of development and how development will occur. The degree to which this occurs will depend on how local governments apply the proposed new rule, and on how different an amended local Shoreline Master Program is from the present SMP. Ecology does not regard this as a significant adverse effect on over-all development in the shoreline zone.

The SMA requires balancing between environmental protection and economic uses. The rule amendment is deemed necessary because it appears that this balancing has been tipped in the past as evidenced by the information in Chapter 5.

Critical infrastructure is still going to be allowed as appropriate and needed by local government. Indeed, local government is required to plan for necessary infrastructure.

10 "Why is the US Army Corps of Engineers, Regulatory Branch, Seattle, not on the [Modified Draft EIS] distribution list? (1403)

Response: The SEPA Rules require Ecology to submit copies of the DEIS to each federal agency with jurisdiction over the proposal. The COE does not have jurisdiction over this proposal to adopt a state rule implementing a state law. In addition, the COE does not have any responsibility or authority to approve SMPs that are proposed by local government.

11 The proposed rule amendment and MDEIS: does not analyze Lincoln County's existing Shoreline Master Program, comprehensive land use plans, or land use regulations, with respect to either the Shoreline Management Act or the proposed rule amendment; does not address the fact that Lincoln County's existing SMP was determined by the state to be consistent with the Shoreline Management Act, nor did the Draft EIS identify any aspect of Lincoln County's existing SMP which is inconsistent with the SMA; does not assess "impacts to Lincoln County's critical area ordinances and other regulatory programs which are or may be included by reference or direct inclusion within the SMP"; "lacks findings of fact related to Lincoln County to support it in Lincoln County and it is inconsistent with prior approvals granted" of the County's SMP; "the EIS does not address specific areas of Lincoln County where restoration will be required"; and the "EIS did not relate any of its findings to any specific area of Lincoln County"; therefore the EIS is incomplete. "Therefore we can only respond with the fact that Lincoln County's SMP is consistent with RCW 90.58 as approved by the state."(1408)

Response: The level-of-detail of the MDEIS' descriptions of existing conditions and analyses of environmental effects are appropriate to a nonproject EIS for a state-wide action; the level-of-detail you suggest is not required of a nonproject EIS (WAC 197-11-442). The details related to a specific jurisdiction are addressed at the time that jurisdiction conducts its own SEPA analysis on its proposed SMP amendments. See WAC 197-11-442. Ecology therefore maintains that the MDEIS is both adequate and appropriate with respect to both content and level-of-detail.

The assertion, "Therefore we can only respond with the fact that Lincoln County's SMP is consistent with RCW 90.58 as approved by the state" has no bearing on environmental assessment of the proposed rule amendment. The function of an EIS is to assess environmental effects, not to assess consistency of existing regulations with their parent law. Please refer to the Shoreline Management Act, especially RCW 90.50.020, RCW 90.58.060, and most especially at RCW 90.58.090 (2) (d) which requires that the Department of Ecology review local shoreline master programs "…regarding the consistency of the proposal with the policy of RCW 90.58.020 *and the applicable guidelines*…" (emphasis added).

12 The term "scientific and technical information" should be replaced with the term "best available science." (1280)

Response: During prior reviews of prior versions of the proposed rule amendment, much discussion took place regarding the term "scientific and technical information" which has its roots in the Shoreline Management Act, and the term "best available science" which has its roots in the Growth Management Act. Many

commentators maintained that Ecology improperly applied a GMA standard to an SMA regulation. Seeing no functional difference between the two terms, Ecology chose to use the term "scientific and technical information" in the current version of the proposed rule amendment. The MDEIS simply reflects Ecology's usage in the proposed rule amendment.

13 **"Despite my criticisms, I generally found this DEIS well-written and interesting to read, especially Chapter 5." (1280)**

Response: Thank you.

14 **"In the DEIS of June 2000, pp 49-50, there is reference to "in" geologically hazardous areas and "on" unstable bluffs. This is disconcerting, because "in" and "on" the hazard area is insufficient regulation and protection. "Above", "below" and "next to" are equally vulnerable. Please add "and adjacent" to the text as "in and adjacent" and "on and adjacent" -- or similar legal language to reflect geological reality and the nine volumes of scientific information the DOE has produced. (1269)**

Response: This comment is on the rule language, not on the impact analysis; this comment has been forwarded to the rule development team.

15 **"I realize that a DEIS on these rules has been prepared, but how does this all fit in, for instance, if I was to want to establish a business on my shoreline property and needed to do my own EIS? Which is subservient to which? Which is redundant?" (1309)**

Response: The purpose of an EIS is provide decision-makers with some of the information necessary to an informed decision. In this instance the decision is on adoption of a amended Shoreline Master Program Guidelines rule by the Department of Ecology. When a city or county amends their Shoreline Master Program pursuant to the amended rule (assuming it is adopted), they may choose to prepare an EIS on their action, and may base it in part on this EIS. If you were to develop your shoreline property, and if you were required to prepare an EIS, you might base your EIS, in part, on other preceding EISs, as well as on other information. An EIS is not subservient to another, nor is an EIS ever considered redundant; all impact statements are prepared for a specific action.

16 **As stated previously in our August 1999 comments, we disagree with statements made in the DEIS that the alternatives analyzed were contemplated by the Shoreline Guidelines Commission. We specifically object to the suggestion that Alternative B: Prescriptive Standards was "considered but eliminated from detailed study early in the Commission's process". The Commission did not reach consensus regarding a new rule comprised of prescriptive standards; therefore, the Commission by default dropped this approach for their further consideration. As a participant to the Commission, we advocated prescriptive standards that were based on the best available science. While the Commission may be have agreed to drop this approach due to a lack of consensus, the Commission did not discuss the environmental review process and the range of potential alternatives to be considered for this review. There was no consensus on the approach for**

the rule; therefore, it is inappropriate to suggest that the Commission agreed on eliminating the prescriptive standards approach from environmental review. The DEIS must be modified accordingly on page 3 and anywhere else this suggestion has been made. (1266)

Response: Chapter 4, Alternatives, of the FEIS has been amended to more accurately reflect that there was an on-going discussion throughout the commission process on this issue.

17 **While the Shoreline Guidelines Commission may not have agreed on using prescriptive standards for the modified Guidelines Rule, Ecology is not precluded from considering such an approach to develop the modified rule. Furthermore, such standards should be considered in the DEIS since it is likely that these standards would have the least environmental impact throughout the state. One of the requirements of SEPA is WAC 197-11-440 (5)(b), which states "reasonable alternatives shall include actions that could feasibly attain or approximate a proposal's objectives, but at a lower environmental cost or decreased level of environmental degradation". Of the four alternatives considered, Alternative B, the prescriptive standards alternative, could represent a potential alternative that would meet the objectives of the Shoreline Management Act, but at a lower environmental cost than the other three alternatives discussed in the DEIS. As written, the DEIS fails to evaluate "reasonable alternatives" because Alternative B was not analyzed. Therefore, the FEIS should contain a revised alternatives analysis that would analyze Alternative B. As part of this analysis, Alternative B should be rewritten as a complete separate rule with defined specific measurable performance standards that are based on the best available science, including the relevant literature cited in the DEIS. (1266)**

Response: The SEPA Rules at WAC 197-11-442 "Contents of EIS on nonproject proposals" states at section (4): "The EIS's discussion of alternatives for a comprehensive plan, community plan, or other areawide zoning or for shoreline or land use plans shall be limited to a general discussion of the impacts of alternate proposals for policies contained in such plans, for land use or shoreline designations, and for implementation measures. The lead agency is not required under SEPA to examine all conceivable policies, designations, or implementation measures but should cover a range of such topics. The EIS content may be limited to a discussion of alternatives which have been formally proposed or which are, while not formally proposed, reasonably related to the proposed action." Ecology maintains that the MDEIS is consistent with the requirements of SEPA for analysis of a nonproject proposal.

Regarding the request that "Alternative B should be rewritten as a complete separate rule with defined specific measurable performance standards…" Ecology respectfully rejects this request for the reasons this approach was rejected in the past as described in Chapter 4.

18 **For the brief analysis that is provided in the DEIS, there is some attempt to discuss existing conditions of shorelines state-wide; however, a much**

more detailed description and quantification of existing aquatic and terrestrial habitat, water quality and water quantity conditions within and between WRIAs is necessary to assess the likely outcome of Alternative D, "Performance Standards", if adopted and implemented. (1266)

Response: The level-of-detail of the MDEIS' descriptions of existing conditions and analyses of environmental effects are appropriate to a nonproject EIS for a state-wide action; the level-of-detail you suggest is not required of a nonproject EIS (WAC 197-11-442). Ecology therefore maintains that the MDEIS is both adequate and appropriate with respect to both content and level-of-detail.

19 **"As part of the SEPA review for these regulations, we specifically request that Ecology evaluate the conditional uses and variances granted in the past by local governments and determine the cumulative environmental impact from these conditional uses and variances." (1296)**

Response: The level-of-detail of the MDEIS' descriptions of existing conditions and analyses of environmental effects are appropriate to a nonproject EIS for a state-wide action; the level-of-detail you suggest is not required of a nonproject EIS (WAC 197-11-442). Ecology therefore maintains that the MDEIS is both adequate and appropriate with respect to both content and level-of-detail.

20 **"We request that Ecology, as part of its SEPA analysis, review how the public rights of navigation has been diminished given the proliferation of piers and docks in Washington's shorelines." and "We request that Ecology evaluate as part of its SEPA EIS how the public's right to navigation is protected given the proliferation of docks and piers that serve only private interests that intrude into the public's shoreline." (1296)**

Response: The level-of-detail of the MDEIS' descriptions of existing conditions and analyses of environmental effects are appropriate to a nonproject EIS for a state-wide action; the level-of-detail you suggest is not required of a nonproject EIS (WAC 197-11-442). Ecology therefore maintains that the MDEIS is both adequate and appropriate with respect to both content and level-of-detail. The issue of piers and docks potentially interfering with near-shore navigation was (and is) acknowledged in Chapter 6, Section "Piers and Docks (230 (3) (b))".

21 **The potential adverse effects of the guidelines on growth management was nor analyzed. The guidelines as drafted will take large tracks of land in both urban and rural areas out of development, frustrating locally-based GMA planning. An increase in buffers, setbacks, critical area protection, and other land restrictions will force projected population growth into rural Areas, undermining the GMA's effort to curb sprawl. (1307, 1382, 1397)**

Response: We do not concur that there will be adverse effects upon GMA-mandated efforts to manage growth, or will confound GMA planning efforts. To the contrary, SMPs prepared in accordance with the proposed guidelines will, as required by law, be an integrated component of a GMA comprehensive plan. This rule amendment is consistent with GMA planning requirements that channel growth to appropriate areas. See also response to Comment 9.

22 Various commentators addressed the Modified Draft EIS scoping process, maintaining that the process improperly relied on the scoping for the original 1999 Draft EIS, that the process was not public, that amended scoping should have occurred for Part IV (Path B), or some variation on these words. (33, 1263, 1266, 1307, 1326, 1401, 1402)

Response: The MDEIS is the second draft of a Draft EIS that was prepared on a previous version of this rule. The MDEIS has been completely revised in response to the changes in the rule and comments received on the first DEIS. Scoping was done for the first DEIS, and is only necessary once. Scoping is not required, or needed, on subsequent versions of a DEIS on the same subject.

Also, Ecology does not concur that is was necessary to re-issue a scoping notice for the EIS to identify discussions that were occurring between the Federal Services and Ecology. There is nothing in the SEPA rules that requires the Lead Agency, during the course of preparing its SEPA analyses, to re-issue scoping if the process changes.

23 "On a broader level, the DEIS does not acknowledge the true condition of the environment in rural coastal Washington. DOE continues to claim that even if ESHB 1724 did not mandate that shoreline rules be updated, enough change has occurred in the last 28 years to require an update. However, in most measurable ways the environment has noticeably improved in coastal Washington over the last 28 years. For example, the population of the Willapa watershed is substantially lower than it was 28 years ago. Water quality in streams has improved, secondary treatment in sewage treatment plants has been instituted, and industrial discharge has been reduced in quantity and has increased in quality. Habitat for wildlife is vastly improved. The number of acres in public ownership and/or preservation status has increased. More than 220 salmonid habitat restoration projects have been completed in the Willapa watershed in the last five years alone. The forest and fish bill governs 85 percent of the land base of the Willapa watershed, and will mandate restoration of hundreds of miles of riparian habitat. Pacific County has adopted a Growth Management Act Comprehensive Plan which permanently identifies over 70 percent of the County as Forest Land of Long-Term Commercial Significance, essentially setting it aside from development. The County has adopted a Critical Areas and Resource Lands Ordinance that implements sizable buffers." "In Pacific County (and likely throughout the rural areas of the state), extensive salmonid recovery efforts, critical areas ordinance requirements, growth management plans, and forest and fish legislation are currently resulting in net gain of riparian areas. The DEIS and the proposed rule exaggerate the need for a new rulemaking by referring to an incomplete analysis of current environmental conditions and initiatives." (1401, 1402)

Response: The proposed rule amendment will be applied state-wide, and the MDEIS therefore addresses state-wide characteristics and potential effects. Chapter 5 of the EIS has been amended to caution readers that while the characteriza-

tions are accurate on a state-wide basis, variations can be expected regionally or with variations in development intensity

Regarding the specific assertions about the characteristics of the Willapa Watershed and Pacific County, Ecology first notes that contrary to the comment, the population of the Willapa Watershed is likely not "substantially lower than it was 28 years ago". Population census and projection information indicates consistent growth in Pacific County since 1960 as follows: 1960: 14,674; 1970: 15,796; 1980: 17237; 1990: 18,882; 2000: 21,992; 2010: 24, 915; and 2020: 28,628 (source: Office of Financial Management census and projection data available at http://www.ofm.wa.gov/). The Final EIS for the Pacific County GMA Comprehensive Plan (August 1998) makes no mention of population declines, and notes only a population increase.

Ecology sought some amplification of the statement that "water quality in streams has improved" in the Final EIS for the Pacific County GMA Comprehensive Plan (August 1998) and found no corroboration. To the contrary, that Final EIS noted that additional studies were needed to address water quality problems:

> Overall these studies have found that the majority of Willapa Bay and Willapa Watershed meet the Class A criterion for water quality. However, concern with elevated levels of coliform bacteria in some areas has prompted the investigation and evaluation of numerous sources and locations of these bacteria. Potential sources of coliform bacteria include background animal sources, agricultural run-off, and failed on-site sewage disposal systems.

That above referenced study has now been completed (Pickett, 2000) and it finds that:

> Data showed that temperature, FC [fecal coliform] bacteria, and DO [dissolved oxygen] levels failed to meet criteria at mainstem and tributary monitoring sites throughout the basin. Several permitted point sources also had high bacteria levels.

The assertion that "habitat for wildlife is vastly improved," is difficult to reconcile with the statement in the Final EIS for the Pacific County GMA Comprehensive Plan (August 1998) which states that "currently there is no detailed inventory of fish and wildlife habitat within Pacific County" and no information on wildlife habitat quality is presented in that EIS.

Many of the other assertions are difficult or impossible to evaluate because there is no provision of specifics or citations of source material.

24. "The DEIS (and its sub-reference to the Washington State Department of Fish and Wildlife riparian areas recommendations) cites a yearly loss of approximately 2000 acres of riparian areas as a justification for amending shoreline rules. The reference, however, does not acknowledge that since the state has over 1,000,000 acres of riparian areas, it would take nearly 500 years to lose the state's riparian areas. The DEIS also does not acknowledge that the referenced study was completed in 1989, which predates the GMA, critical areas legislation, the forest and fish bill, and salmonid habitat restoration." (1401, 1402)

Response: The assertion that the MDEIS states a "yearly loss of approximately 2000 acres of *riparian* areas" [emphasis added] is not correct. What the DEIS does discuss is the loss or degradation of approximately 2000 acres per year of *wetlands*, not riparian areas. This material is found at pages 38 – 41 in the section on Wetlands.

Riparian areas are discussed in Chapter 5 at pages 33 – 37 under the heading Stream and River Shorelines. The MDEIS contains no estimates of the area of loss or degradation of riparian areas. Wetlands and riparian areas are not the same thing.

The MDEIS makes it clear (through citations to the literature) that the research behind the '2000 acre per year' loss rate was originally published during the time period 1988 to 1992.

25. "The DEIS incorporates by reference WDFW's "Management Recommendations for Washington's Priority Habitats, Riparian" (Knutson, et al, 1997). The DEIS reproduces portions of this document relating to the impact of urban activities but fails to cite the section on agricultural impacts. The document identifies habitat degradation that results from agricultural practices in general (p.60) and that results from grazing practices (p.57)." (1394)

Response: The MDEIS addresses the effects of agricultural practices at pages 35 and 74-75. See also Comment 4.

26. "Ecology needs to explain why one of the major contributors [agriculture] to habitat degradation is exempted from SMA coverage and also needs to conduct an analysis in the DEIS of the alternative impacts on habitat that will result from the exemption or non-exemption of existing agricultural activity. This is a key decision, as the DEIS recognizes that continuing the agricultural exemption will result in a failure to achieve the statutory mandate of both the SMA and the ESA." (1394)

Response: The rule does not exempt agriculture (see Sections 240(3)(a) and 340 (3)(a)). New agricultural uses will need to comply with the new regulations. Additionally, Ecology concluded that the best forum for addressing impacts from existing and ongoing agriculture is the "Ag/Fish/Water" negotiations being conducted to address agricultural uses as they related to the federal Endangered Species Act in a comprehensive manner. The discussion of Agriculture in the FEIS has been amended reflect this.

27. "WAC 173-26-210 (5)(c)(,iii)- Critical saltwater habitats. The first paragraph is written to suggest that saltwater habitats have a higher level of protection than freshwater habitats. The Guidelines and the DEIS should provide some explanation, analysis, and data to support this implication." (1266)

Response: The correct citation for the critical saltwater habitat section is WAC 173-26-220 (2) (c) (iii). This section is a part of the critical areas portion of the draft rule which also includes (i) wetlands, (ii) geologically hazardous areas, and (iv) riverine corridors and other freshwater fish and wildlife conservation areas. There is no implication that "critical saltwater habitats are any more or less impor-

tant than "riverine corridors and other freshwater fish and wildlife conservation areas" or any other critical area.

28. Requirements for properly functioning conditions (PFC) are found throughout Part IV of the draft rule, but the MDEIS does not analyze PFC which, when enforced, will severely affect not only new but also existing human activities, including agriculture. (907)

Response: Chapter 7, Integrated Analysis has been amended to include "properly functioning conditions" in the existing discussion of other similar concepts such as ecological restoration and vegetation conservation.

29. The DEIS is too generalized and variable. (28)

Chapter 2, Approach and Affected Environment (pages 7 – 9 of the MDEIS) explains why a generalized approach is necessary and appropriate for a nonproject EIS on a rule amendment which will be implemented in slightly different ways by 249 different local governments. Please refer to Chapters 5, 6, and 7 (pages 31 – 92 of the MDEIS) for the actual impact analyses.

No EIS on the proposed rule, however detailed, can relieve local governments of their responsibility to comply with SEPA when they amend their local Shoreline Master Program to comply with the proposed rule, should it be adopted.

Please refer to page 6 which simply acknowledges that there are controversial issues surrounding the proposed rule which cannot be resolved through environmental impact analysis. An environmental impact statement is merely one of many information and analytical resources which decision-makers can and should use in making a decision.

30. The EIS does not address the impact to local agencies for issuing letters of exemption for single-family development permits. It requires a land owner(s) to obtain a review and approval for everything they do which is inconsistent with RCW 90.58. (1408)

An EIS is not required to analyze the impact of every single aspect of the proposal. The requirement under Part IV (Path B) to begin tracking activities that are exempt from permit requirements by issuing letters of exemption would not typically be expected to have an environmental effect that must be addressed under SEPA.

9 • References Cited and Consulted

This bibliography contains three types of materials: [1] some were consulted for general background information in preparing this environmental impact statement, but were not cited in the text; [2] some were explicitly used in preparing this environmental impact statement, and are cited in the text; and [3], some items listed here were not reviewed directly, but are cited in lengthy quotations from materials of type 2.

This bibliography also indicates those materials incorporated by reference as a part of this environmental impacts statement by displaying them in **bold face** type. Incorporations by reference are available for review at the Department of Ecology.

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Appendix A: Draft EIS Authors and Contributors

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James Schroeder, formerly with Coastal & Shorelands Section, Shorelands & Environmental Assistance Program, Washington Department of Ecology, Olympia: Alternatives analyses.

Peter Skowlund, Coastal & Shorelands Section, Shorelands & Environmental Assistance Program, Washington Department of Ecology, Olympia: Process characterization, needs statement.

Barbara Ritchie, Environmental Coordination Section, Shorelands & Environmental Assistance Program, Washington Department of Ecology, Olympia: EIS design, scoping.

Appendix B:
EIS Distribution Lists

Final EIS

Copies of t Final EIS were initially provided to [1] the responsible official, [2] the Department of Ecology, and [3] to each of the commentators on the Modified Draft EIS listed in Chapter 8. Organizations on the MDEIS distribution list which did not comment were mailed a notice of availability.

Modified Draft EIS

The Modified Draft EIS was initially provided to the following agencies and organizations. Additional copies were distributed to persons requesting copies and to persons who acquired copies from the Department of Ecology's web site.

Local Governments

Please refer to Appendix C for a list of the local governments required to adopt a shoreline master program under the Shoreline Management Act.

Regional Agencies

Cowlitz-Wahkiakum Council of Governments, Kelso

Grays Harbor Council of Governments, Aberdeen

Hood Canal Coordinating Council, Quilcene

Puget Sound Regional Council, Seattle

Thurston Regional Planning Council, Olympia

Washington State Agencies

Agriculture, Department of

Commerce, Trade and Economic Development, Department of
- Archaeology & Historic Preservation
- Growth Management Division

Ecology, Department of,
- Environmental Coordination Section
- Library

Fish and Wildlife, Department of

Health, Department of

Library, Washington State

Natural Resources, Department of

Parks and Recreation Commission

Transportation, Department of

Native American Governments

Chehalis Confederated Tribes

Colville Confederated Tribes

Cowlitz Tribe

Elwha Klallam Tribe

Hoh Tribe

Jamestown S' Klallam Tribe

Kalispel Tribe

Lummi Tribe

Makah Tribe

Muckleshoot Tribe

Nisqually Tribe

Nooksack Tribe

Port Gamble S'Klallam Tribe

Puyallup Tribe

Quileute Tribe

Quinault Tribe

Samish Tribe

Sauk-Suiattle Tribe

Shoalwater Bay Tribe

Skokomish Tribe

Spokane Tribe

Squaxin Island Tribe

Stillaguamish Tribe

Suquamish Tribe

Swinomish Tribe

Tulalip Tribes

Upper Skagit Tribe

Yakama Indian Nation

Federal Government Agencies

Environmental Protection Agency, Region 10, Seattle

Federal Emergency Management Agency, Bothell

Fish and Wildlife Service, Region 1, Portland

National Oceanic and Atmospheric Administration:

- National Marine Fisheries Service, Northwest Regional Office, Seattle
- Office of Ocean and Coastal Resource Management, Silver Spring, MD

Appendix C:
WAC 173-26-080
Master programs required of local governments

The following local governments, listed alphabetically by county, are required to develop and administer a shoreline master program:

Adams County.

Asotin County.

- Asotin, city of.
- Clarkston, city of.

Benton County.

- Benton City, city of.
- Kennewick, city of.
- Prosser, city of.
- Richland, city of.
- West Richland, city of.

Chelan County.

- Cashmere, city of.
- Chelan, city of.
- Entiat, town of.
- Leavenworth, city of.
- Wenatchee, city of.

Clallam County.

- Forks, city of.
- Port Angeles, city of.
- Sequim, city of.

Clark County.

- Camas, city of.
- LaCenter, town of.
- Ridgefield, town of.
- Vancouver, city of.
- Washougal, city of.
- Woodland, city of.

Columbia County.

- Dayton, city of.
- Starbuck, town of.

Cowlitz County.

- Castle Rock, city of.
- Kalama, city of.
- Kelso, city of.
- Longview, city of.
- Woodland, city of.

Douglas County.

- Bridgeport, town of.
- Coulee Dam, city of.
- East Wenatchee, city of.
- Rock Island, town of.

Ferry County.

- Republic, town of.

Franklin County.

- Pasco, city of.

Garfield County.

Grant County.

- Coulee City, city of.
- Coulee Dam, city of.
- Electric City, city of.

Grand Coulee, city of.
Krupp, town of.
Moses Lake, city of.
Soap Lake, city of.
Wilson Creek, town of.

Grays Harbor County.
Aberdeen, city of.
Cosmopolis, city of.
Elma, city of.
Hoquiam, city of.
Montesano, city of.
Oakville, city of.
Ocean Shores, city of.
Westport, city of.

Island County.
Coupeville, town of.
Langley, city of.
Oak Harbor, city of.

Jefferson County.
Port Townsend, city of.

King County.
Auburn, city of.
Beaux Arts Village, town of.
Bellevue, city of.
Black Diamond, city of.
Bothell, city of.
Burien, city of.
Carnation, town of.
Covington
Des Moines, city of.
Duvall, city of.
Federal Way, city of.
Hunts Point, town of.
Issaquah, city of.
Kenmore
Kent, city of.
Kirkland, city of.
Lake Forest Park, city of.
Maple Valley
Medina, city of.
Mercer Island, city of.
Milton, city of.
Newcastle, city of.
Normandy Park, city of.
North Bend, city of.
Pacific, city of.
Redmond, city of.
Renton, city of.
Sammamish
Sea-Tac, city of.
Seattle, city of.
Shoreline, city of.
Skykomish, town of.
Snoqualmie, city of.
Tukwila, city of.
Woodinville, city of.
Yarrow Point, town of.

Kitsap County.
Bremerton, city of.
Port Orchard, city of.
Poulsbo, city of.
Bainbridge Island, city of.

Kittitas County.
Cle Elum, city of.

Ellensburg, city of.
South Cle Elum, town of.
Klickitat County.
Bingen, town of.
Goldendale, city of.
White Salmon, town of.
Lewis County.
Centralia, city of.
Chehalis, city of.
Morton, city of.
Pe Ell, town of.
Toledo, city of.
Vader, city of.
Winlock, city of.
Lincoln County.
Odessa, town of.
Sprague, city of.
Mason County.
Shelton, city of.
Okanogan County.
Brewster, town of.
Conconully, town of.
Coulee Dam, city of.
Okanogan, city of.
Omak, city of.
Oroville, town of.
Pateros, town of.
Riverside, town of.
Tonasket, town of.
Twisp, town of.
Winthrop, town of.
Pacific County.
Ilwaco, town of.
Long Beach, town of.
Raymond, city of.
South Bend, city of.
Pend Oreille County.
Cusick, town of.
Ione, town of.
Metaline, town of.
Metaline Falls, town of.
Newport, city of.
Pierce County.
Bonney Lake, city of.
Buckley, city of.
Dupont, city of.
Eatonville, town of.
Fife, city of.
Gig Harbor, city of.
Lakewood, city of.
Milton, city of.
Orting, city of.
Pacific, city of.
Puyallup, city of.
Roy, city of.
Ruston, town of.
South Prairie, town of.
Steilacoom, town of.
Sumner, city of.
Tacoma, city of.
University Place, city of.
Wilkeson, town of.
San Juan County.
Friday Harbor, town of.

Skagit County.
- Anacortes, city of.
- Burlington, city of.
- Concrete, town of.
- Hamilton, town of.
- La Conner, town of.
- Lyman, town of.
- Mount Vernon, city of.
- Sedro Woolley, city of.

Skamania County.
- North Bonneville, city of.
- Stevenson, town of.

Snohomish County.
- Arlington, city of.
- Bothell, city of.
- Brier, city of.
- Edmonds, city of.
- Everett, city of.
- Gold Bar, town of.
- Granite Falls, town of.
- Index, town of.
- Lake Stevens, city of.
- Lynnwood, city of
- Marysville, city of.
- Monroe, city of.
- Mountlake Terrace, city of.
- Mukilteo, city of.
- Snohomish, city of.
- Stanwood, city of.
- Sultan, town of.
- Woodway, town of.

Spokane County.
- Latah, town of.
- Medical Lake, town of.
- Millwood, town of.
- Rockford, town of.
- Spokane, city of.
- Waverly, town of.

Stevens County.
- Chewelah, city of.
- Northport, town of.

Thurston County.
- Bucoda, town of.
- Lacey, city of.
- Olympia, city of.
- Tenino, town of.
- Tumwater, city of.
- Yelm, town of.

Wahkiakum County.
- Cathlamet, town of.

Walla Walla County.
- Waitsburg, town of.
- Walla Walla, city of.

Whatcom County.
- Bellingham, city of.
- Blaine, city of.
- Everson, city of.
- Ferndale, city of.
- Lynden, city of.
- Nooksack, city of.
- Sumas, city of.

Whitman County.
- Albion, town of.
- Colfax, city of.

Malden, town of.

Palouse, city of.

Pullman, city of.

Rosalia, town of.

Tekoa, city of.

Yakima County.

Grandview, city of.

Granger, town of.

Naches, town of.

Selah, city of.

Union Gap, city of.

Yakima, city of.

Zillah, city of.

Appendix D: Glossary of Terms and Acronyms

channel migration zone: means the lateral extent of likely movement along a stream reach with evidence of active stream channel movement over the past one hundred years. Evidence of active movement can be provided from aerial photos or specific channel and valley bottom characteristics. A time frame of one hundred years was chosen because aerial photos and field evidence can be used to evaluate movement in this time frame. Also, this time span typically represents the time it takes to grow mature trees that can provide functional large woody debris to most streams. In large meandering rivers a more detailed analysis can be conducted to relate bank erosion processes and the time required to grow trees that function as stable large woody debris. The CMZ shall include floodways and wetlands, as defined under chapter 90.58 RCW, whether associated with either shorelines of the state or shorelines of state-wide significance, as defined under chapter 90.58 RCW.

CMZ: channel migration zone.

CSH: critical saltwater habitat.

DCTED: the Washington Department of Community, Trade, and Economic Development.

drift cell (also known as drift sector or littoral cell): a discrete reach of marine shore in which littoral drift may occur without significant interruption, and which contains any and all sources of such drift, and also any accretion shoreforms accreted by the drift material.

ESHB 1724: an act of the 1995 Washington State Legislature "relating to implementing the recommendations of the governor's task force on regulatory reform on integrating growth management planning and environmental review" including integration of growth management and shoreline management.

ESU: "evolutionarily significant unit" — a terminology used to indicate a "distinct" population of Pacific salmon, and therefore a species as defined under the Endangered Species Act.

GMA: Growth Management Act

littoral drift: the sedimentary material moved along a beach under the influence of waves and currents.

PFC: properly functioning condition(s).

properly functioning condition(s): means conditions that create and sustain natural habitat-affecting processes (such as sediment routing, riverine community succession, precipitation runoff patterns, a natural range of flow variability and channel migration) over the full range of environmental variation and that support productivity at a viable population level of T&E species. The term "properly functioning condition" indicates a level of performance for a subset of the more broadly defined "ecological functions," reflecting what is necessary for the recovery of T&E species.

proposed, threatened, and endangered species: means those native species that are proposed to be listed or are listed in rule by the Washington state department of fish and wildlife pursuant to RCW 77.12.020 as threatened (WAC 232-12-011) or endangered (WAC 232-12-014), or that are proposed to be listed as threatened or endangered or that are listed as threatened or endangered under the federal Endangered Species Act, 16 U.S.C. 1533.

RCW: Revised Code of Washington—laws enacted by the Washington State Legislature.

Section 4(d) Rule: The 4(d) rule is issued by the federal government and lists do's and don'ts for protecting threatened salmon. The rule is named after a section of the Endangered Species Act and prohibits the “taking,” or harming, of protected salmon or their habitat. Violating the rules spelled out in the 4(d) rule could leave the violator open to federal fines and other penalties. The proposed rule may also list certain activities that can continue without violating the law. (Definition taken from the Tri-county Endangered Species Act web page at http://www.salmoninfo.org/tricounty/QandA.htm)

SEPA: State Environmental Policy Act (Chapter 43.21C RCW).

SHB: Shorelines Hearings Board.

shoreline armoring: structural methods of shoreline erosion management which “armor” or “harden” the shore, typically bulkheads and seawalls, revetments, and rock structures incorporating vegetation.

site potential tree height: means the average height, at age one hundred years, of the tallest mature native tree species that is capable of growing in the soils found at the site and for which height measurements are noted in the soil survey reports published by the natural resource conservation service and other sources. Each local natural resource conservation service field office maintains the surveys for its area.

SMA: Shoreline Management Act (Chapter 90.58 RCW).

SMP: Shoreline Master Program

SPTH: site potential tree height.

SSWS: Shorelines of statewide significance

T&E or T&E species: threatened or endangered species.

WAC: Washington Administrative Code—regulations adopted by Washington state agencies pursuant to laws adopted by the legislature.